APPENDIX C Product Label Keyword Definitions, Values - VICAR Sort

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
msn_surface:**application_id** *TELEMETRY. **APPLICATION_PROCESS_ID***	The application_id (often abbreviated APID) attribute identifies the process, or source, which created the data. This can include information such as an identification of the instrument which generated the telemetry stream, its operating mode at the time of data acquisition, and any onboard compression of the data. **InSight Specific:** *Indicates the Application ID (APID) number for this product. APID's are used to distinguish types of telemetry products. In general the APID Name should be used rather than the numeric value (see APPLICATION_PROCESS_NAME).*		
			ASCII_NonNegative_Integer
msn_surface:**application_name** *TELEMETRY. **APPLICATION_PROCESS_NAME***	The application_name attribute provides the name associated with the source or process which created the data. **InSight Specific:** *Indicates the Application ID (APID) name for this product. APID's are used to distinguish types of telemetry products. See the main body of the SIS for a list of APIDs.*		
			ASCII_Short_String_Collapsed
geom:**selected_instrument_id** *ARM_ARTICULATION_STATE.* ***ARTICULATION_DEV_INSTRUMENT_ID***	The selected_instrument_id attribute specifies an abbreviated name or acronym that identifies the selected instrument mounted on the articulation device. **InSight Specific:** *The values for InSight are BLADE_1, BLADE_2, SCOOP, IDC, WRIST, GRAPPLE, GRAPPLE_ATTACH, SEIS, WTS, HP3, and NOTOOL.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[1]/selected_instrument_id**	
			ASCII_Short_String_Collapsed
geom:**x_unit** *ARM_ARTICULATION_STATE.* ***ARTICULATION_DEV_VECTOR***	The x component of a unit Cartesian vector.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Axis/x_unit** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Optical/x_unit** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Axis/x_unit** **4)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[1]/Vector_Device_Gravity/x_unit** **5)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Axis/x_unit** **6)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Optical/x_unit**	
			ASCII_Real

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		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**y_unit** *ARM_ARTICULATION_STATE.* ***ARTICULATION_DEV_VECTOR***	The y component of a unit Cartesian vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Axis/y_unit **2)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Optical/y_unit **3)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Axis/y_unit **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[1]/Vector_Device_Gravity/y_unit **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Axis/y_unit **6)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Optical/y_unit	
			ASCII_Real
geom:**z_unit** *ARM_ARTICULATION_STATE.* ***ARTICULATION_DEV_VECTOR***	The z component of a unit Cartesian vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Axis/z_unit **2)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Optical/z_unit **3)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Axis/z_unit **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[1]/Vector_Device_Gravity/z_unit **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Axis/z_unit **6)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Optical/z_unit	
			ASCII_Real
geom:**index_value_angle** *ARM_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_ANGLE*** *ARM_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_ANGLE__UNIT***	The index_value_angle attribute provides the value of an angle as named by the associated index_id, index_name, or index_sequence_number. **InSight Specific:** *Values are in radians.*	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/Device_Angle/Device_Angle_Index[*]/index_value_angle	
			ASCII_Real *Units_of_Angle*
	The device_id attribute specifies the abbreviated identification of an articulation device.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/device_id	

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		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**device_id** **_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_ID***	**InSight Specific:** *On InSight the ids are 'IDA' for the arm and 'GRAPPLE' for the grapple.*		ASCII_Short_String_Collapsed
geom:**device_mode** *GRAPPLE_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_MODE***	The device_mode attribute specifies the deployment state (i.e., physical configuration) of an articulation device at the time of data acquisition. Examples include 'Arm Vibe', 'Deployed', 'Free Space', 'Stowed'. Note: the value set for this attribute is mission-specific and should be declared in a mission-specific dictionary. **InSight Specific:** *State of the grapple fingers. The value is determined by the IDA FSW by reading the state of the two limit switches on the grapple. It affects when the grapple opening algorithm completes. Bit 0 is the 'fingers closed' switch, with 0=fingers-not-closed and 1=fingers-closed. Bit 1 is the 'fingers open' switch, with 0=fingers-open and 1=fingers-not-open. This translates to the 4 states in the valid values list: OPEN, BROKEN, IN_BETWEEN, CLOSED. There is no mode for the IDA (arm) articulation device.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[2]/device_mode**	
			ASCII_Short_String_Collapsed
geom:**device_name** *GRAPPLE_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_NAME***	The device_name attribute specifies the common name of an articulation device. **InSight Specific:** *On InSight the names are 'INSTRUMENT_DEPLOYMENT_ARM' and 'GRAPPLE'.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/device_name**	
			ASCII_Short_String_Collapsed
geom:**device_phase** *GRAPPLE_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_PHASE***	The device_phase attribute specifies the current phase of the mission, from an articulation-device-centric point of view. **InSight Specific:** *Current mission phase from a grapple-centric perspective. This affects whether the IDA_OPEN_GRAPPLE command is accepted (only in OK_TO_OPEN phase), and the assumed force on the end of the arm (based on which instrument the phase says is grappled) during arm deflection computation. Only human operators (via spacecraft command) can change this value. Valid values are LAUNCH_LOCKED, STOWED, OK_TO_OPEN, SEIS_GRAPPLED, WTS_GRAPPLED, HP3_GRAPPLED.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[2]/device_phase**	
			ASCII_Short_String_Collapsed
geom:**index_value_temperature** **_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_TEMP*** **_ARTICULATION_STATE.* ***ARTICULATION_DEVICE_TEMP__UNIT***	The index_value_temperature attribute provides the value of a temperature as named by the associated index_id or index_name.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/Device_Temperature/Device_Temperature_Index/index_value_temperature**	
			ASCII_Real *Units_of_Temperature*
img:**auto_exposure_data_cut** *OBSERVATION_REQUEST_PARMS.* ***AUTO_EXPOSURE_DATA_CUT***	The auto_exposure_data_cut attribute specifies the DN value which a specified fraction of pixels is permitted to exceed. The fraction is specified using the auto_exposure_data_fraction attribute.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/Autoexposure/auto_exposure_data_cut**	
			ASCII_Integer
	The auto_exposure_percent attribute specifies the auto-exposure early-termination percent. If the desired DN	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/Autoexposure/auto_exposure_percent**	

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		Valid Values (attribute) *Children (class)*	Data Type *Units*
img:**auto_exposure_percent** *OBSERVATION_REQUEST_PARMS.* ***AUTO_EXPOSURE_PERCENT***	(auto_exposure_data_cut) is within this percentage of the measured DN (the DN at which the percentage of pixels above that DN equals or exceeds the auto_exposure_pixel_fraction), then the auto exposure algorithm is terminated and the calculated time is accepted.		ASCII_Real
img:**auto_exposure_pixel_fraction** *OBSERVATION_REQUEST_PARMS.* ***AUTO_EXPOSURE_PIXEL_FRACTION***	The auto_exposure_pixel_fraction attribute specifies the percentage of pixels whose DN values may exceed the auto_expsoure_data_cut.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/Autoexposure/auto_exposure_pixel_fraction**	
			ASCII_Real
img:**sample_fov** *INSTRUMENT_STATE_PARMS.* ***AZIMUTH_FOV*** *INSTRUMENT_STATE_PARMS.* ***AZIMUTH_FOV__UNIT***	The sample_fov attribute specifies the angular measure of the field of view of an imaged scene, as measured in the image sample direction (generally horizontal). **InSight Specific:** *Computed by projecting rays from the left and right edges of the image at the center through the camera model, and computing the angle subtended by those rays.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Subframe/sample_fov**	
			ASCII_Real *Units_of_Angle*
img:**color_filter_array_type** *INSTRUMENT_STATE_PARMS.* ***CFA_TYPE***	Defines the type of Color Filter Array (CFA) used to encode multiple colors in a single exposure. The most common example of this is the Bayer pattern. This is optional if there is no CFA. Additional attributes, specific to each CFA type, define whether or not the CFA pattern has been removed, and if so, how (e.g. bayer_algorithm).	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Filter_Array/color_filter_array_type**	
		1) Bayer RGGB	ASCII_Short_String_Collapsed
img:**color_space** *DERIVED_IMAGE_PARMS.* ***COLOR_SPACE***	Defines the color space in which this product is expressed. Some color spaces (e.g. XYZ or xyY) are independent of illuminant, while for others (e.g. sRGB or pRGB) the illuminant matters. It is expected that the defined color spaces will increase over time.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/color_space**	
		1) iRGB 2) sRGB 3) pRGB 4) wRGB 5) CIE_XYZ 6) CIE_xyY 7) HSI	ASCII_Short_String_Collapsed

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		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**Coordinate_Space_Index** **_COORDINATE_SYSTEM.* ***COORDINATE_SYSTEM_INDEX*** **_COORDINATE_SYSTEM.* ***COORDINATE_SYSTEM_INDEX_NAME*** ****. REFERENCE_COORD_SYSTEM_INDEX***	Identifies a coordinate space using an index value given in an identified list. **InSight Specific:** *InSight uses coordinate space indices of 'SITE' and 'DRIVE'. Although InSight is not supposed to move once landed, these are included for compatibility with other Mars surface missions.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]** **2)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index** **4)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index** **5)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index** **6)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]** **7)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]** **8)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]** **9)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index** **10)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[1]/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index** **11)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Present/Coordinate_Space_Indexed/Coordinate_Space_Index[*]** **12)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index**	
		1) *geom:index_value_number* 2) *geom:index_id* 3) *geom:List_Index_No_Units*	

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		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**coordinate_space_frame_type** *LANDER_COORDINATE_SYSTEM.* ***COORDINATE_SYSTEM_NAME*** *ARM_COORDINATE_SYSTEM.* ***COORDINATE_SYSTEM_NAME*** *SITE_COORDINATE_SYSTEM.* ***COORDINATE_SYSTEM_NAME***	The coordinate_space_frame_type attribute identifies the type of frame being described, such as SITE, LOCAL_LEVEL, LANDER, ROVER, ARM, etc. When combined with Coordinate_Space_Index and the optional solution_id in the Coordinate_Space_Indexed class, this serves to fully name an instance of a coordinate space. **InSight Specific:** *Coordinate systems used by the InSight pipeline are Site, Lander, and Arm.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/coordinate_space_frame_type** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed/coordinate_space_frame_type** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/coordinate_space_frame_type** **4)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/coordinate_space_frame_type** **5)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/Coordinate_Space_Reference/Coordinate_Space_Indexed/coordinate_space_frame_type** **6)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[1]/Coordinate_Space_Reference/Coordinate_Space_Indexed/coordinate_space_frame_type** **7)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Present/Coordinate_Space_Indexed/coordinate_space_frame_type** **8)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/Coordinate_Space_Reference/Coordinate_Space_Indexed/coordinate_space_frame_type**	
			ASCII_Short_String_Collapsed
proc:**program_start_date_time** **. **DAT_TIM***	The program_start_date_time specifies the datetime for the start of the software program execution.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program[*]/program_start_date_time** **2)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program/program_start_date_time**	
			ASCII_Date_Time_YMD_UTC
img_surface:**derived_image_type_name** *DERIVED_IMAGE_PARMS.* ***DERIVED_IMAGE_TYPE***	The derived_image_type_name attribute specifies how to interpret the pixel values in a derived image (or colloquially, the type of the derived image itself). Valid values vary per mission depending on the products produced. **InSight Specific:** *Additional types may be added throughout the mission. See the SIS for a table of current valid values.*		
			ASCII_Short_String_Collapsed
img:**erase_count** *OBSERVATION_REQUEST_PARMS.* ***DETECTOR_ERASE_COUNT***	The erase_count specifies the number of times a detector has been or will be flushed of data in raw counts, dependent on the parent class for the attribute. **InSight Specific:** *Number of fast flushes*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Detector/erase_count**	
			ASCII_NonNegative_Integer
		1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Detector/detector_to_image_rotation	

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		Valid Values (attribute) *Children (class)*	Data Type *Units*
img:**detector_to_image_rotation** *INSTRUMENT_STATE_PARMS.* ***DETECTOR_TO_IMAGE_ROTATION***	The detector_to_image_rotation attribute specifies the clockwise rotation, in degrees, that was applied to an image along its optical path through an instrument, from detector to final image orientation. **InSight Specific:** *The IDC EDR is rotated 270 degrees, so the arm/grapple is at the top of the image. The ICC requires no rotation.*		ASCII_Real *Units_of_Angle*
msn_surface:**download_priority** *TELEMETRY. **DOWNLOAD_PRIORITY***	The download_priority attribute specifies which data to downlink/transmit, based on order of importance. The lower numerical priority (higher-ranked number) data products are transmitted before higher numerical priority (lower-ranked number) data products. For example, an image with a downlink priority of 1 will be transmitted before an image with a downlink priority of 6. Value of 0 specifies use of on-board default. **InSight Specific:** *Values are 1-6 for InSight.*		
			ASCII_NonNegative_Integer
msn_surface:**earth_received_start_date_time** *TELEMETRY. **EARTH_RECEIVED_START_TIME***	The earth_received_start_date_time attribute provides the earliest time at which any component telemetry data for a particular product was received.		
			ASCII_Date_Time_YMD_UTC
msn_surface:**earth_received_stop_date_time** *TELEMETRY. **EARTH_RECEIVED_STOP_TIME***	The earth_received_stop_date_time attribute provides the latest time at which any component telemetry data for a particular product was received.		
			ASCII_Date_Time_YMD_UTC
img:**line_fov** *INSTRUMENT_STATE_PARMS. **ELEVATION_FOV*** *INSTRUMENT_STATE_PARMS.* ***ELEVATION_FOV__UNIT***	The line_fov attribute specifies the angular measure of the field of view of an imaged scene, as measured in the image line direction (generally vertical). **InSight Specific:** *Computed by projecting rays from the top and bottom edges of the image at the center through the camera model, and computing the angle subtended by those rays.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Subframe/line_fov**	
			ASCII_Real *Units_of_Angle*
img:**encoded_display_gamma** *DERIVED_IMAGE_PARMS.* ***ENCODED_DISPLAY_GAMMA***	Defines the gamma value encoded in this image. Gamma correction is used to nonlinearly compress the intensities in an image, and most display systems assume that images are encoded with an sRGB gamma. Note that this is a string value because the most common gamma correction ("sRGB") is not precisely expressible as a gamma exponent. A numeric value indicates a gamma exponent.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/encoded_display_gamma**	
			ASCII_Short_String_Collapsed
img_surface:**Error_Model** *DERIVED_IMAGE_PARMS.* ***ERROR_MODEL_DESC__PTR***	The Error_Model class specifies the name of the error model used, a reference to the algorithm descriptions, and the parameters needed for that algorithm. The specific set of values is determined by each individual missions.		
		1) *img_surface:error_model_name* 2) *img_surface:Error_Model_Parameter* 3) *Internal_Reference*	

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img_surface:**error_model_name** *DERIVED_IMAGE_PARMS.* ***ERROR_MODEL_NAME***	The error_model_name attribute specifies the method or algorithm used to create the error estimate. Each mission will define their own set of possible values. Algorithms will be added over time. The initial value is MIPL_CONST_DISPARITY_PROJECTED_V1, which means an arbitrary constant disparity error is assumed (in ERROR_MODEL_PARMS), which is projected through the camera models to approximate an error ellipse, which is then projected to the XYZ or range/crossrange axes depending on the file type. **InSight Specific:** *The only error model used by the InSight pipeline is MIPL_CONST_DISPARITY_PROJECTED_V1, which projects a constant disparity into XYZ space to determine the error.*		ASCII_Short_String_Collapsed
msn_surface:**expected_packets** *TELEMETRY.* ***EXPECTED_PACKETS***	The expected_packets attribute provides the total number of telemetry packets which constitute a complete data product, i.e., a data product without missing data.		 ASCII_NonNegative_Integer
img:**exposure_count** *INSTRUMENT_STATE_PARMS.* ***EXPOSURE_COUNT***	The exposure count attribute provides the number of exposures taken during a certain interval, such as the duration of one command. For example, this may include the number of exposures needed by an autoexpose algorithm. **InSight Specific:** *Actual number of auto exposure iterations*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Exposure/exposure_count**	 ASCII_NonNegative_Integer
img:**exposure_duration** *INSTRUMENT_STATE_PARMS.* ***EXPOSURE_DURATION*** *INSTRUMENT_STATE_PARMS.* ***EXPOSURE_DURATION__UNIT***	The exposure_duration attribute provides the amount of time the instrument sensor was gathering light from the scene, such as between opening and closing of a shutter, or between flushing and readout of a CCD.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Exposure/exposure_duration**	 ASCII_Real *Units_of_Time*
img:**exposure_duration_count** *OBSERVATION_REQUEST_PARMS.* ***EXPOSURE_DURATION_COUNT***	The exposure_duration_count attribute specifies the value, in raw counts, for the amount of time the instrument sensor was gathering light from the scene, such as between opening and closing of a shutter, or between flushing and readout of a CCD. This is the raw count either commanded or taken directly from telemetry as reported by the spacecraft. This attribute is the same as the exposure_duration but in DN counts instead of time, and the translation of exposure_duration_count to exposure_duration will differ by mission. **InSight Specific:** *For InSight, the factor is 6.21 msec/DN.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Exposure/exposure_duration_count** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/exposure_duration_count**	 ASCII_NonNegative_Integer
img:**exposure_type** *OBSERVATION_REQUEST_PARMS.* ***EXPOSURE_TYPE***	The exposure_type attribute indicates the exposure setting on a camera. Valid values: 'Manual' - manual exposure setting, 'Auto' - autoexposure is applied by the camera, 'Test' - test exposure setting telling the camera to return a fixed-pattern test image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/exposure_type** 1) Manual 2) Auto 3) Test	 ASCII_Short_String_Collapsed
		1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Subframe/first_line	

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		Valid Values (attribute) *Children (class)*	Data Type *Units*
img:**first_line** *IMAGE_DATA. **FIRST_LINE***	The first_line attribute indicates the line within a source image that corresponds to the first line in a sub-image. **InSight Specific:** *InSight does not support subframing, so this value is always 1.*		ASCII_NonNegative_Integer
img:**first_sample** *IMAGE_DATA. **FIRST_LINE_SAMPLE***	The first_sample attribute indicates the sample within a source image that corresponds to the first sample in a sub-image. **InSight Specific:** *InSight does not support subframing, so this value is always 1.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Subframe/first_sample**	
			ASCII_NonNegative_Integer
msn_surface:**flight_software_version_id** *TELEMETRY. **FLIGHT_SOFTWARE_VERSION_ID***	The flight_software_version_id attribute identifies the version of the instrument flight software used to acquire the image.		
			ASCII_Short_String_Collapsed
data_type *SYSTEM. **FORMAT***	The data_type attribute provides the hardware representation used to store a value in Element_Array.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]/data_type** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited/Field_Delimited[*]/data_type** **3)/Product_Observational/File_Area_Observational/Array_2D_Image/Element_Array/data_type** **4)/Product_Observational/File_Area_Observational/Array_3D_Image/Element_Array/data_type**	
		1) ComplexLSB16 2) ComplexLSB8 3) ComplexMSB16 4) ComplexMSB8 5) IEEE754LSBDouble 6) IEEE754LSBSingle 7) IEEE754MSBDouble 8) IEEE754MSBSingle 9) SignedBitString 10) SignedByte 11) SignedLSB2 12) SignedLSB4 13) SignedLSB8 14) SignedMSB2 15) SignedMSB4 16) SignedMSB8 17) UnsignedBitString 18) UnsignedByte 19) UnsignedLSB2 20) UnsignedLSB4 21) UnsignedLSB8 22) UnsignedMSB2 23) UnsignedMSB4 24) UnsignedMSB8	ASCII_Short_String_Collapsed
		1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Frame/frame_id	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
img:**frame_id** *IDENTIFICATION. **FRAME_ID***	The frame_id attribute specifies an identification for a particular instrument measurement frame. A frame consists of a sequence of measurements made over a specified time interval, and may include measurements from different instrument modes. These sequences repeat from cycle to cycle and sometimes within a cycle. **InSight Specific:** *Used to denote the commanded camera eye for stereo. InSight has no stereo camera but the IDC is commanded with some images marked 'left' and 'right' for ease of stereo processing. Note that any given image can be used either as a left or right eye image in special processing; this value reflects only the commanded intent (via IMAGE_ID).*		ASCII_Short_String_Collapsed
img:**frame_type_name** *IDENTIFICATION. **FRAME_TYPE***	The frame_type_name attribute specifies whether the image was commanded as part of a stereo pair or as a single left or right monoscopic image. If frame_type = 'Stereo', a left and a right image should be present.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Frame/frame_type_name**	
			ASCII_Short_String_Collapsed
img_surface:**geometry_projection_type** *IDENTIFICATION.* ***GEOMETRY_PROJECTION_TYPE***	The geometry_projection_type attribute specifies how pixels in a file have been reprojected to correct for camera distortion, linearization, or rubber-sheeting (it is not the intent of this field to capture map projections). "Raw" indicates no projection has been done. **InSight Specific:** *RAW means the image uses a CAHVOR or CAHVORE camera model. LINEARIZED means that reprojection has been performed to linearize the camera model (thus removing things like lens distortion). This means the image uses a CAHV camera model.*		
		1) Raw 2) Linearized	ASCII_Short_String_Collapsed
msn_surface:**surface_gravity** *ARM_ARTICULATION_STATE.* ***GRAVITY_ACCELERATION***	The surface_gravity attribute specifies the acceleration of gravity (magnitude, not direction).		
			ASCII_Real *Units_of_Acceleration*
img:**illuminant** *DERIVED_IMAGE_PARMS. **ILLUMINANT***	Defines the illuminant that was used in order to process this image. The valid values are open-ended but examples of valid values include: None, D65, 3000K, 5000K.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/illuminant**	
			ASCII_Short_String_Collapsed
msn_surface:**data_size** *TELEMETRY. **IMAGE_DATA_SIZE***	The data_size specifies number of bytes in the compressed data stream, not including headers.		
			ASCII_NonNegative_Integer

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
img_surface:**image_id** *IDENTIFICATION*. ***IMAGE_ID***	The image_id is an arbitrary string identifier that is associated with this image. The specific interpretation of it is mission-dependent, and it need not be unique to this image. For example, missions may use it as an image counter, a round-trip token indicating how to process the image, or a FSW-assigned value identifying the image. **InSight Specific:** *The image_id is a 32-bit integer token set in the command sent from the ground, and returned in the image telemetry.'It contains five subfields, each of which has its own label attributes: sequence_id, mesh_id, mosaic_id, stereo_id, and camera eye (frame_id). See each attribute for its usage.'Note that image_id values are not unique (multiple images may share the same ID).*		ASCII_Short_String_Collapsed
img_surface:**image_type** *IDENTIFICATION*. ***IMAGE_TYPE***	The image_type attribute specifies the type of image acquired. The intent is to distinguish between different kinds of image-related data that may differ in how they are interpreted. Some types are not standard images, but they are stored in an image structure. Examples include Regular, Thumbnail, Reference Pixels, Histogram, Row Sum, and Column Sum.		
		1) REGULAR 2) THUMBNAIL 3) REF_PIXELS 4) HISTOGRAM 5) ROW_SUM 6) COL_SUM 7) SPECTRA 8) HEALTH	ASCII_Short_String_Collapsed
proc:**Input_Product** *DERIVED_IMAGE_PARMS*. ***INPUT_PRODUCT_ID***	The Input_Product class describes one of the product most directly used as input to software for product creation, including raw, partially-processed, calibrated, or derived products.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product[*]** **2)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product**	
		1) *local_identifier* 2) *External_Reference* 3) *Internal_Reference*	
img:**color_subsampling_mode** *COMPRESSION_PARMS.* ***INST_CMPRS_COLOR_MODE***	The color_subsampling_mode attribute specifies the JPEG color subsampling mode used during compression. Valid values: '4:2:2' - 4:2:2 chroma subsampling, which is the typical case, '4:4:4' - 4:4:4 chroma sampling, which indicates no subsampling, 'Grayscale' - indicates a grayscale image **InSight Specific:** *Note that the VICAR valid values are different from PDS 4 but mean the same: COLOR_MODE_GRAY, COLOR_MODE_422, COLOR_MODE_444*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression/JPEG_Parameters/color_subsampling_mode**	
		1) 4:4:4 2) 4:2:2 3) Grayscale	ASCII_Short_String_Collapsed
img:**onboard_compression_type** *COMPRESSION_PARMS.* ***INST_CMPRS_NAME***	The onboard_compression_type attribute identifies the type of on-board compression used for data storage and transmission. Valid Values: 'ICER', 'LOCO', 'JPEG', 'JPEG Progressive', 'MSSS Lossless', 'None'. **InSight Specific:** *Almost all images will be JPEG. The only other option is None, which is unlikely to be used outside of instrument calibration and checkout.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression/onboard_compression_type**	
		1) ICER 2) ICT 3) LOCO 4) JPEG 5) JPEG Progressive 6) MSSS Lossless 7) None	ASCII_Short_String_Collapsed
		1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression/JPEG_Parameters/jpeg_quality	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
img:**jpeg_quality** *COMPRESSION_PARMS.* ***INST_CMPRS_QUALITY***	The jpeg_quality attribute is a JPEG specific variable which identifies the resultant or targeted image quality index for on-board data compression.		ASCII_NonNegative_Integer
img:**onboard_compression_rate** *COMPRESSION_PARMS.* ***INST_CMPRS_RATE***	The onboard_compression_rate attribute provides the average number of bits needed to represent a pixel for image that was compressed on-board for data storage and transmission. **InSight Specific:** *Represents actual results (not commanded value)*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression/onboard_compression_rate**	
			ASCII_Real
img:**onboard_compression_ratio** *COMPRESSION_PARMS.* ***INST_CMPRS_RATIO***	The onboard_compression_ratio attribute provides the ratio of the size, in bytes, of the original uncompressed data object to its compressed form (original size / compressed size). Onboard compression is performed for data storage and transmission. **InSight Specific:** *Represents actual results (not commanded value)*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression/onboard_compression_ratio**	
			ASCII_Real
geom:**instrument_azimuth** *SITE_DERIVED_GEOMETRY_PARMS.* ***INSTRUMENT_AZIMUTH*** *SITE_DERIVED_GEOMETRY_PARMS.* ***INSTRUMENT_AZIMUTH__UNIT***	The instrument_azimuth attribute specifies the value for an instrument's rotation in the horizontal direction. It may be measured from a low hard stop, or relative to a coordinate frame. Although it may be used for any instrument where it makes sense, it is primarily intended for use in surface-based instruments that measure pointing in terms of azimuth and elevation. If this value is expressed using a coordinate system, the coordinate system is specified by the Coordinate_Space_Reference class. The interpretation of exactly what part of the instrument is being pointed is mission-specific. It could be the boresight, the camera head direction, the CAHV camera model A vector direction, or any of a number of other things. As such, for multimission use this value should be used mostly as an approximation, e.g. identifying scenes which might contain a given object. **InSight Specific:** *The interpretation is the boresight of the camera, defined as projecting the center of the nominal image (before downsampling or subframing) through the camera model. Azimuth is measured in Site frame.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/instrument_azimuth**	
			ASCII_Real *Units_of_Angle*
	The instrument_elevation attribute specifies the value for an instrument's rotation in the vertical direction. It may be	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/instrument_elevation**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**instrument_elevation** *SITE_DERIVED_GEOMETRY_PARMS.* ***INSTRUMENT_ELEVATION*** *SITE_DERIVED_GEOMETRY_PARMS.* ***INSTRUMENT_ELEVATION__UNIT***	usually measured from a low hard stop, or relative to a coordinate frame. Although it may be used for any instrument where it makes sense, it is primarily intended for use in surface-based instruments that measure pointing in terms of azimuth and elevation. If this value is expressed using a coordinate system, the coordinate system is specified by the Coordinate_Space_Reference class. The interpretation of exactly what part of the instrument is being pointed is mission-specific. It could be the boresight, the camera head direction, the CAHV camera model A vector direction, or any of a number of other things. As such, for multimission use this value should be used mostly as an approximation, e.g. identifying scenes that might contain a given object. **InSight Specific:** *The interpretation is the boresight of the camera, defined as projecting the center of the nominal image (before downsampling or subframing) through the camera model. Elevation is measured in Site frame.*		ASCII_Real *Units_of_Angle*

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
lid_reference *IDENTIFICATION. **INSTRUMENT_ID***	The lid_reference attribute provides the logical_identifier for a product.	**1)/Product_Collection/Context_Area/Investigation_Area/Internal_Reference/lid_reference** **2)/Product_Collection/Context_Area/Observing_System/Observing_System_Component[*]/Internal_Reference/lid_reference** **3)/Product_Collection/Context_Area/Target_Identification/Internal_Reference/lid_reference** **4)/Product_Collection/Reference_List/Internal_Reference[*]/lid_reference** **5)/Product_Document/Reference_List/Internal_Reference[*]/lid_reference** **6)/Product_Document/Context_Area/Investigation_Area/Internal_Reference/lid_reference** **7)/Product_Document/Context_Area/Observing_System/Observing_System_Component/Internal_Reference/lid_reference** **8)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Geometry_Projection/Internal_Reference/lid_reference** **9)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Stereo_Product_Parameters/Internal_Reference/lid_reference** **10)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Placement_Target_Instrument/Internal_Reference/lid_reference** **11)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Flat_Field_Correction/Flat_Field_File/Internal_Reference/lid_reference** **12)/Product_Observational/Observation_Area/Investigation_Area/Internal_Reference/lid_reference** **13)/Product_Observational/Observation_Area/Observing_System/Observing_System_Component[*]/Internal_Reference/lid_reference** **14)/Product_Observational/Observation_Area/Target_Identification/Internal_Reference/lid_reference** **15)/Product_Browse/Reference_List/Internal_Reference/lid_reference**	
			ASCII_LID
img_surface:**ops_instrument_key** *IDENTIFICATION. **INSTRUMENT_ID***	The ops_instrument_key attribute specifies the identifier or key for the instrument that was used during operations to look up instrument parameters or calibration.		
			ASCII_Short_String_Preserved

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
img_surface:**instrument_mode_id** *INSTRUMENT_STATE_PARMS.* ***INSTRUMENT_MODE_ID***	The instrument_mode_id attribute provides an instrument-dependent designation of operating mode. This may be simply a number, letter or code, or a word such as 'normal', 'full resolution', 'near encounter', or 'fixed grating'. These types may vary by mission so the permissible values should be set by the mission dictionaries. **InSight Specific:** *For InSight the value is always 'FULL_FRAME'.*		ASCII_Short_String_Collapsed
img_surface:**instrument_serial_number** *IDENTIFICATION.* ***INSTRUMENT_SERIAL_NUMBER***	The instrument serial number element provides the manufacturer's serial number assigned to an instrument. This number may be used to uniquely identify a particular instrument for tracing its components or determining its calibration history, for example.		
			ASCII_Short_String_Collapsed
img:**temperature_value** *INSTRUMENT_STATE_PARMS.* ***INSTRUMENT_TEMPERATURE*** *INSTRUMENT_STATE_PARMS.* ***INSTRUMENT_TEMPERATURE__UNIT***	The temperature_value attribute provides the temperature, in the specified units, of some point on an imaging instrument or other imaging instrument device.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Instrument_State/Device_Temperatures/Device_Temperature[*]/temperature_value**	
			ASCII_Real *Units_of_Temperature*
img:**device_id** *INSTRUMENT_STATE_PARMS.* ***INSTRUMENT_TEMPERATURE_NAME***	The device_id attribute supplies the identifier of an imaging instrument, an imaging instrument device, or some point on the instrument or device. **InSight Specific:** *On InSight this is used to describe camera temperatures. Values are 'IDC_CCD', 'IDC_ELECTRONICS', 'ICC_CCD', and 'ICC_ELECTRONICS'.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Instrument_State/Device_Temperatures/Device_Temperature[*]/device_id**	
			ASCII_Short_String_Collapsed
img_surface:**instrument_type** *IDENTIFICATION.* ***INSTRUMENT_TYPE***	The instrument_type attribute specifies the type of an instrument, for example IMAGING CAMERA, SPECTROMETER, IMAGING SPECTROMETER, RADIOMETER, etc. **InSight Specific:** *For InSight cameras, the value is always 'IMAGING CAMERA'*		
			ASCII_Short_String_Collapsed
img_surface:**instrument_version_number** *IDENTIFICATION.* ***INSTRUMENT_VERSION_ID***	The instrument_version_number element identifies the specific model of an instrument used to obtain data. For example, this keyword could be used to distinguish between an engineering model of a camera used to acquire test data, and a flight model of a camera used to acquire science data during a mission. **InSight Specific:** *For InSight the value is 'EMC' for engineering model, 'FMC' for flight model, or 'SIM' for the simulator.*		
			ASCII_Short_String_Collapsed
invalid_constant *IMAGE_DATA.* ***INVALID_CONSTANT***	The invalid_constant attribute provides a value that indicates the original value was outside the valid range for the parameter. **InSight Specific:** *The value should be 0.0 for most MIPL-generated products. No distinction is generally made between invalid and missing data.*	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Special_Constants/invalid_constant** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Special_Constants/invalid_constant**	
			ASCII_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
offset *SYSTEM. **LBLSIZE***	The offset attribute provides the displacement of the object starting position from the beginning of the parent structure (file, record, etc.). If there is no displacement, offset=0.	**1)/Product_Collection/File_Area_Inventory/Inventory/offset** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/offset** **3)/Product_Observational/File_Area_Observational_Supplemental[1]/Stream_Text/offset** **4)/Product_Observational/File_Area_Observational_Supplemental[*]/Encoded_Image/offset** **5)/Product_XML_Schema/File_Area_XML_Schema[*]/XML_Schema/offset** **6)/Product_File_Text/File_Area_Text/Stream_Text/offset** **7)/Product_Observational/File_Area_Observational/Array_2D_Image/offset** **8)/Product_Observational/File_Area_Observational/Header/offset** **9)/Product_Observational/File_Area_Observational/Array_3D_Image/offset** **10)/Product_Observational/File_Area_Observational_Supplemental/Encoded_Image/offset** **11)/Product_Browse/File_Area_Browse/Encoded_Image/offset**	
			ASCII_NonNegative_Integer *Units_of_Storage*
object_length *SYSTEM. **LBLSIZE***	The object_length attribute provides the length of the digital object in bytes.	**1)/Product_Observational/File_Area_Observational/Header/object_length**	
			ASCII_NonNegative_Integer *Units_of_Storage*
img:**samples** *IMAGE_DATA. **LINE_SAMPLES***	The samples attribute indicates the total number of data instances along the horizontal axis of an image or sub-image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Subframe/samples**	
			ASCII_NonNegative_Integer
img_surface:**linearization_mode_fov** *DERIVED_IMAGE_PARMS.* ***LINEARIZATION_MODE***	The linearization_mode_fov attribute specifies how the linearized camera model's field of view (FOV) as constructed (corresponding to the "cahv_fov" parameter in MIPL software). **InSight Specific:** *On InSight, Nominal mode is not available.*		
		1) Min 2) Max 3) Linear 4) None	ASCII_Short_String_Collapsed
img:**lines** *IMAGE_DATA. **LINES***	The lines attribute indicates the total number of data instances along the vertical axis of an image or sub-image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Subframe/lines**	
			ASCII_NonNegative_Integer
		1)/Product_Observational/Observation_Area/Time_Coordinates/local_mean_solar_time	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
local_mean_solar_time *IDENTIFICATION*. ***LOCAL_MEAN_SOLAR_TIME***	The local_mean_solar_time attribute provides the hour angle of the fictitious mean Sun at a fixed point on a rotating solar system body.		ASCII_Short_String_Collapsed
msn:**start_local_mean_solar_time** *IDENTIFICATION*. ***LOCAL_MEAN_SOLAR_TIME***	start_local_mean_solar_time is the local mean solar time, as defined in the main PDS4 data dictionary.		
			ASCII_Short_String_Collapsed
msn:**start_local_true_solar_time** *IDENTIFICATION*. ***LOCAL_TRUE_SOLAR_TIME***	start_local_true_solar_time is the local true solar time, as defined in the main PDS4 data dictionary. **InSight Specific:** *The valid value is expressed in terms of a 24-hour clock, so the acceptable range is 00:00:00.000 to 23:59:59.999. See also LOCAL_TRUE_SOLAR_TIME_SOL for the sol number.*		
			ASCII_Short_String_Collapsed
msn:**start_local_true_solar_time_sol** *IDENTIFICATION*. ***LOCAL_TRUE_SOLAR_TIME_SOL***	The start_local_true_solar_time_sol element specifies the number of solar days elapsed since a reference day (e.g. the day on which a landing vehicle set down) for local true solar time (LTST). Days are measured in rotations of the planet in question from midnight to midnight. The reference day is '0', as Landing day is Sol 0. If before Landing day, then value will be less than or equal to '0'and can be negative. **InSight Specific:** *The reference day is 0, as Landing day is Sol 0. If before Landing day, then value will be less than or equal to 0 and can be negative.*		
			ASCII_Integer
cart:**lander_map_projection_name** *SURFACE_PROJECTION_PARMS.* ***MAP_PROJECTION_TYPE***	The map_projection_name attribute provides the name of the map projection.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/lander_map_projection_name**	
		1) Cylindrical 2) Vertical 3) Perspective 4) Polar 5) Orthographic 6) Orthorectified 7) Cylindrical_Perspective	ASCII_Short_String_Collapsed
cart:**pixel_resolution_x** *SURFACE_PROJECTION_PARMS.* ***MAP_SCALE*** *SURFACE_PROJECTION_PARMS.* ***MAP_SCALE__UNIT***	The pixel_resolution_x and pixel_resolution_y attributes indicate the image array pixel resolution (distance/pixel or degree/pixel) relative to the Cartesian (x,y) coordinate system as defined by the map projection. Due to varying properties across different map projections, actual surface distances for an individual pixel may be accurate only at specific location(s) within the image array (e.g. reference latitude or longitude, standard parallels, etc). For most PDS products, x and y resolution values are equal ('square' pixels). The inclusion of both x and y attributes allows for anticipated products where resolution may differ for each axis ('rectangular' pixels). NOTE: Definition of this PDS4 attribute differs from how 'resolution' was defined within PDS3. **InSight Specific:** *Meters/pixel, corresponds to MAP_SCALE in VICAR/PDS 3*	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/pixel_resolution_x** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/pixel_resolution_x**	
			ASCII_Real *Units_of_Map_Scale*

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
cart:**pixel_resolution_y** *SURFACE_PROJECTION_PARMS.* ***MAP_SCALE*** *SURFACE_PROJECTION_PARMS.* ***MAP_SCALE__UNIT***	The pixel_resolution_x and pixel_resolution_y attributes indicate the image array pixel resolution (distance/pixel or degree/pixel) relative to the Cartesian (x,y) coordinate system as defined by the map projection. Due to varying properties across different map projections, actual surface distances for an individual pixel may be accurate only at specific location(s) within the image array (e.g. reference latitude or longitude, standard parallels, etc). For most PDS products, x and y resolution values are equal ('square' pixels). The inclusion of both x and y attributes allows for anticipated products where resolution may differ for each axis ('rectangular' pixels). NOTE: Definition of this PDS4 attribute differs from how 'resolution' was defined within PDS3. **InSight Specific:** *Meters/pixel, corresponds to MAP_SCALE in VICAR/PDS 3*	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/pixel_resolution_y **2)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/pixel_resolution_y	ASCII_Real *Units_of_Map_Scale*
img:**max_auto_exposure_iteration_count** *OBSERVATION_REQUEST_PARMS.* ***MAX_AUTO_EXPOS_ITERATION_COUNT***	The max_auto_exposure_iteration_count attribute specifies the maximum number of exposure iterations the instrument will perform in order to obtain the requested exposure.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/Autoexposure/max_auto_exposure_iteration_count	ASCII_Integer
cart:**maximum_elevation** *SURFACE_PROJECTION_PARMS.* ***MAXIMUM_ELEVATION*** *SURFACE_PROJECTION_PARMS.* ***MAXIMUM_ELEVATION__UNIT***	The maximum_elevation attribute specifies the elevation (as defined by the coordinate system) of the first line of the image. For the Polar projection, specifies the highest elevation used, i.e. the elevation of the outermost circle of pixels. Applies to lander map projections Cylindrical, Polar, Sinusoidal, Perspective and Cylindrical-Perspective.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/maximum_elevation	ASCII_Real *Units_of_Angle*
img_surface:**mesh_id** *IDENTIFICATION.* ***MESH_ID***	The mesh_id attribute specifies which terrain mesh this image should be automatically included in. This does not constrain which mesh(es) the image may be included in outside a pipeline environment. **InSight Specific:** *Value is extracted from the image_id attributes value. Meshes combine images with matching mesh_id, sequence_id, and Epoch values. A mesh_id of 0 means do not include in a mesh. Values 1-9 mean to match within the same Sol only. Values 10-63 match globally across the entire mission. For non-raw products, any two characters, including non-numeric characters, may be used.*		ASCII_Short_String_Collapsed
cart:**minimum_elevation** *SURFACE_PROJECTION_PARMS.* ***MINIMUM_ELEVATION*** *SURFACE_PROJECTION_PARMS.* ***MINIMUM_ELEVATION__UNIT***	The minimum_elevation attribute specifies the elevation (as defined by the coordinate system) of the last line of the image for Cylindrical map projections. Applies to Cylindrical, Perspective and Cylindrical-Perspective lander map projections.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/minimum_elevation	ASCII_Real *Units_of_Angle*
missing_constant *IMAGE_DATA.* ***MISSING_CONSTANT***	The missing_constant attribute provides a value that indicates the original value was missing, such as due to a gap in coverage. **InSight Specific:** *The value should be 0.0 for most MIPL-generated products. No distinction is generally made between invalid and missing data.*	**1)**/Product_Observational/File_Area_Observational/Array_2D_Image/Special_Constants/missing_constant **2)**/Product_Observational/File_Area_Observational/Array_3D_Image/Special_Constants/missing_constant	ASCII_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
msn:**mission_phase_name** *IDENTIFICATION.* ***MISSION_PHASE_NAME***	The mission_phase_name attribute provides the commonly recognized name for a mission phase. **InSight Specific:** *For InSIght the valid values are DEVELOPMENT, ATLO, CRUISE, SURFACE MISSION, and TEST.*		
			ASCII_Short_String_Collapsed
geom:**Vector_Center** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_1*** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_UNIT***	The Vector_Center describes the location of the entrance pupil of a camera.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Center** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Center** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Center**	
		1) *geom:x_position* 2) *geom:y_position* 3) *geom:z_position* 4) *geom:Vector_Cartesian_Position_Base*	
geom:**Vector_Axis** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_2***	The Vector_Axis is a unit vector that describes the axis of the camera, defined as the normal to the image plane.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Axis** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Axis** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Axis**	
		1) *geom:x_unit* 2) *geom:y_unit* 3) *geom:z_unit* 4) *geom:Vector_Cartesian_Unit*	
geom:**Vector_Horizontal** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_3***	The Vector_Horizonal is a composite vector encoding three quantities: H' (a vector in the image plane perpendicular to the vertical columns), Hs (the distance between the lens center and image plane, measured in horizontal pixels), and Hc (the horizontal image coordinate directly under C when moving parallel to A). H' is often thought of as describing the orientation of rows in space, but is actually perpendicular to the columns.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Horizontal** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Horizontal** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Horizontal**	
		1) *geom:x_pixel* 2) *geom:y_pixel* 3) *geom:z_pixel* 4) *geom:Vector_Cartesian_Pixel*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**Vector_Vertical** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_4***	The Vector_Vertical is a composite vector encoding three quantities: V' (a vector in the image plane perpendicular to the horizontal rows), Vs (the distance between the lens center and image plane, measured in vertical pixels), and Vc (the vertical image coordinate directly under C when moving parallel to A). V' is often thought of as describing the orientation of columns in space, but is actually perpendicular to the rows.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Vertical** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Vertical** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Vertical**	
		1) *geom:x_pixel* 2) *geom:y_pixel* 3) *geom:z_pixel* 4) *geom:Vector_Cartesian_Pixel*	
geom:**Vector_Optical** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_5***	The Vector_Optical is a unit vector that describes the axis of symmetry for radial distortion in the camera.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Optical** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Optical**	
		1) *geom:x_unit* 2) *geom:y_unit* 3) *geom:z_unit* 4) *geom:Vector_Cartesian_Unit*	
geom:**Radial_Terms** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_6***	Radial_Terms contains the coefficients of a polynomial function used to describe the radial distortion of the camera.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Radial_Terms** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Radial_Terms**	
		1) *geom:c0* 2) *geom:c1* 3) *geom:c2* 4) *geom:Polynomial_Coefficients_3*	
geom:**Entrance_Terms** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_7***	The Entrance_Terms contains the coefficients of a polynomial function used to model movement of the entrance pupil.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Entrance_Terms**	
		1) *geom:c0* 2) *geom:c1* 3) *geom:c2* 4) *geom:Polynomial_Coefficients_3*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**x_position** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_NAME***	The x component of a Cartesian position vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Center/x_position **2)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Center/x_position **3)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Center/x_position **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Vector_Origin_Offset/x_position	
			ASCII_Real *Units_of_Length*
geom:**y_position** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_NAME***	The y component of a Cartesian position vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Center/y_position **2)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Center/y_position **3)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Center/y_position **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Vector_Origin_Offset/y_position	
			ASCII_Real *Units_of_Length*
geom:**z_position** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_COMPONENT_NAME***	The z component of a Cartesian position vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Center/z_position **2)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Center/z_position **3)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Center/z_position **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Vector_Origin_Offset/z_position	
			ASCII_Real *Units_of_Length*

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**qcos** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TRANSFORM_QUATERNION***	qcos is the scalar component of a quaternion. qcos = cos(theta/2), where theta is the angle of rotation.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Quaternion_Model_Transform/qcos** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Quaternion_Plus_Direction/qcos**	
			ASCII_Real
geom:**qsin1** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TRANSFORM_QUATERNION***	qsin1 is the first element of the vector component of a quaternion. qsin1 = x*sin(theta/2) where theta is the angle of rotation and (x,y,z) is the unit vector around which the rotation occurs.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Quaternion_Model_Transform/qsin1** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Quaternion_Plus_Direction/qsin1**	
			ASCII_Real
geom:**qsin2** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TRANSFORM_QUATERNION***	qsin2 is the second element of the vector component of a quaternion. qsin2 = y*sin(theta/2) where theta is the angle of rotation and (x,y,z) is the unit vector around which the rotation occurs.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Quaternion_Model_Transform/qsin2** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Quaternion_Plus_Direction/qsin2**	
			ASCII_Real
geom:**qsin3** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TRANSFORM_QUATERNION***	qsin3 is the third element of the vector component of a quaternion. qsin3 = z*sin(theta/2) where theta is the angle of rotation and (x,y,z) is the unit vector around which the rotation occurs.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Quaternion_Model_Transform/qsin3** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Quaternion_Plus_Direction/qsin3**	
			ASCII_Real
geom:**x** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TRANSFORM_VECTOR***	The x component of a Cartesian vector which has no units.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Vector_Model_Transform/x**	
			ASCII_Real
geom:**y** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TRANSFORM_VECTOR***	The y component of a Cartesian vector which has no units.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Vector_Model_Transform/y**	
			ASCII_Real
geom:**z** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TRANSFORM_VECTOR***	The z component of a Cartesian vector which has no units.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Vector_Model_Transform/z**	
			ASCII_Real
	The model_type attribute specifies an identifier for the type or kind of model. The value should be one of a well	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/model_type**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
geom:**model_type** *GEOMETRIC_CAMERA_MODEL.* ***MODEL_TYPE***	defined set, providing an application program with sufficient information to know how to handle the rest of the parameters within the model. This value will correlate directly with the specific camera model class that is a subclass of the Camera_Model_Parameters class. **InSight Specific:** *For InSight the camera model types are CAHV, CAHVOR, and CAHVORE.*		ASCII_Short_String_Collapsed
img_surface:**mosaic_id** *IDENTIFICATION.* ***MOSAIC_ID***	The mosaic_id attribute specifies which mosaic this image should be automatically included in. This does not constrain which mosaic(s) the image may be included in outside a pipeline environment. **InSight Specific:** *For InSight, value is extracted from the image_id value. Mosaics combine images with matching mosaic_id, sequence_id, and Epoch values. A mosaic_id of 0 means do not include in a mesh. Values 1-9 mean to match within the same Sol only. Values 10-63 match globally across the entire mission. For non-raw products, any two characters, including non-numeric characters, may be used.*		
			ASCII_Short_String_Collapsed
axes *SYSTEM.* ***NB***	The axes attribute provides a count of the axes.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/axes** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/axes**	
		1) 3	ASCII_NonNegative_Integer
elements *SYSTEM.* ***NS*** *SYSTEM.* ***NL*** *SYSTEM.* ***NB***	The elements attribute provides the count of the number of elements along an array axis.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Axis_Array[*]/elements** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Axis_Array[*]/elements**	
			ASCII_NonNegative_Integer
img:**analog_offset** *INSTRUMENT_STATE_PARMS.* ***OFFSET_MODE_ID***	The analog_offset attribute identifies the analog value that is subtracted from the signal prior to the analog/digital conversion. **InSight Specific:** *This value is the video offset, and has a range 0-4095.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Detector/analog_offset**	
			ASCII_Integer
img:**Onboard_Color_Matrix** *INSTRUMENT_STATE_PARMS.* ***ONBOARD_COLOR_MATRIX***	The Onboard_Color_Matrix class represents a 3x3 matrix that is used onboard to perform color correction. It is done after de-Bayering, as all three color bands are needed for each pixel. The first three elements are multiplied by the R,G,B (respectively) pixel values and summed to get the output Red pixel value. Similarly, the second three create the output Green, and the last three the output Blue. If the label is not present, no correction was performed. **InSight Specific:** *It was decided before landing not to use this capability for InSight, because the effects of applying the matrix are not reversible on the ground. Thus this should be the identity matrix (1,0,0,0,1,0,0,0,1).*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix**	
		1) *img:onboard_R_r* 2) *img:onboard_R_g* 3) *img:onboard_R_b* 4) *img:onboard_G_r* 5) *img:onboard_G_g* 6) *img:onboard_G_b* 7) *img:onboard_B_r* 8) *img:onboard_B_g* 9) *img:onboard_B_b*	
		1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Responsivity	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
img:**Onboard_Responsivity** *INSTRUMENT_STATE_PARMS.* ***ONBOARD_RESPONSIVITY***	The Onboard_Responsivity class specifies factors that have been applied to the R, G, and B cells (respectively) of the Bayer pattern, before de-Bayering (demosaicking) takes place. The intent of these is to approximately balance the filters so the de-Bayering process is not skewed, and EDR/ILT products look reasonable before full radiometric or color correction is done on the ground. If these factors are not present, no correction was performed. **InSight Specific:** *On InSight, this is used to boost the blue in order to compensate for markedly less responsivity in the blue sensors, providing a better approximation of the color of the scene in the EDR/ILT.*	1) *img:responsivity_factor_r* 2) *img:responsivity_factor_g* 3) *img:responsivity_factor_b*	
img:**responsivity_factor_r** *INSTRUMENT_STATE_PARMS.* ***ONBOARD_RESPONSIVITY***	Specifies the factor that has been applied to the R cell of the Bayer pattern, before de-Bayering (demosaicking) takes place. **InSight Specific:** *On InSight, this is used to boost the blue in order to compensate for markedly less responsivity in the blue sensors, providing a better approximation of the color of the scene in the EDR/ILT.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Responsivity/responsivity_factor_r**	
			ASCII_Real
img:**responsivity_factor_g** *INSTRUMENT_STATE_PARMS.* ***ONBOARD_RESPONSIVITY***	Specifies the factor that has been applied to the G cell of the Bayer pattern, before de-Bayering (demosaicking) takes place. **InSight Specific:** *On InSight, this is used to boost the blue in order to compensate for markedly less responsivity in the blue sensors, providing a better approximation of the color of the scene in the EDR/ILT.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Responsivity/responsivity_factor_g**	
			ASCII_Real
img:**responsivity_factor_b** *INSTRUMENT_STATE_PARMS.* ***ONBOARD_RESPONSIVITY***	Specifies the factor that has been applied to the B cell of the Bayer pattern, before de-Bayering (demosaicking) takes place. **InSight Specific:** *On InSight, this is used to boost the blue in order to compensate for markedly less responsivity in the blue sensors, providing a better approximation of the color of the scene in the EDR/ILT.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Responsivity/responsivity_factor_b**	
			ASCII_Real
geom:**Vector_Origin_Offset** *LANDER_COORDINATE_SYSTEM.* ***ORIGIN_OFFSET_VECTOR***	The Vector_Origin_Offset class contains attributes that specify the offset from the reference coordinate system's origin to the origin of the coordinate system. It is the location of the current system's origin as measured in the reference system.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Vector_Origin_Offset**	
		1) *geom:x_position* 2) *geom:y_position* 3) *geom:z_position* 4) *geom:Vector_Cartesian_Position_Base*	
	Quaternion_Plus_Direction provides the four elements of a quaternion and its direction of rotation. The two end point	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Quaternion_Plus_Direction**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**Quaternion_Plus_Direction** *LANDER_COORDINATE_SYSTEM.* ***ORIGIN_ROTATION_QUATERNION***	frames must be identified in the enclosing class. See the definition of Quaternion_Base for more details on the quaternion classes in this dictionary. **InSight Specific:** *Note that quaternions have different component order conventions between flight and ground software. They are received in the order (v1, v2, v3, s). However, the ground order convention is is (s, v1, v2, v3), and all values are converted to the ground order before being stored in the label. For InSight, the value for ORIGIN_ROTATION_QUATERNION that defines a coordinate frame like Lander frame is computed with respect to only the orientations of the frame's axes regardless of whether POSITIVE_ELEVATION_DIRECTION is declared to be UP or DOWN.*	1) *geom:qcos* 2) *geom:qsin1* 3) *geom:rotation_direction* 4) *geom:qsin2* 5) *geom:qsin3*	
img:**height_pixels** *INSTRUMENT_STATE_PARMS.* ***PIXEL_AVERAGING_HEIGHT***	The height_pixels attribute provides the vertical dimension, in pixels. **InSight Specific:** *InSight does not support downsampling, so this value is always 1.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Downsampling/Pixel_Averaging_Dimensions/height_pixels**	
			ASCII_NonNegative_Integer *Units_of_Misc*
img:**width_pixels** *INSTRUMENT_STATE_PARMS.* ***PIXEL_AVERAGING_WIDTH***	The width_pixels attribute provides the horizontal dimension, in pixels. **InSight Specific:** *InSight does not support downsampling, so this value is always 1.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Downsampling/Pixel_Averaging_Dimensions/width_pixels**	
			ASCII_NonNegative_Integer *Units_of_Misc*
msn:**start_sol_number** *IDENTIFICATION.* ***PLANET_DAY_NUMBER***	The start_sol_number is the number of the Mars day on which an observation began. Landing day is Sol 0.		
			ASCII_Integer
geom:**positive_azimuth_direction** *LANDER_COORDINATE_SYSTEM.* ***POSITIVE_AZIMUTH_DIRECTION***	The positive_azimuth_direction attribute specifies the direction in which azimuth is measured in positive degrees for an observer on the surface of a body. The azimuth is measured with respect to the elevation reference plane. A value of 'clockwise' indicates that azimuth is measured positively clockwise, and 'counterclockwise' indicates that azimuth increases positively counter-clockwise. **InSight Specific:** *For operational coordinate frames, which follow the Mars Pathfinder convention, increasing azimuth moves in a clockwise (CLOCKWISE) direction as viewed from above.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/positive_azimuth_direction**	
		1) Clockwise 2) Counterclockwise 3) CW 4) CCW	ASCII_Short_String_Collapsed
	The positive_elevation_direction attribute provides the direction in which elevation is measured in positive	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/positive_elevation_direction**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
geom:**positive_elevation_direction** *LANDER_COORDINATE_SYSTEM.* ***POSITIVE_ELEVATION_DIRECTION***	degrees for an observer on the surface of a body. The elevation is measured with respect to the azimuthal reference plane. A value of UP or ZENITH indicates that elevation is measured positively upwards, i.e., the zenith point would be at +90 degrees and the nadir point at -90 degrees. DOWN or NADIR indicates that the elevation is measured positively downwards; the zenith point would be at -90 degrees and the nadir point at +90 degrees. **InSight Specific:** *For operational coordinate frames, which follow the Mars Pathfinder convention, the positive elevation direction is UP.*	1) Up 2) Zenith 3) Down 4) Nadir	ASCII_Short_String_Collapsed
proc:**process_owner_institution_name** *IDENTIFICATION.* ***PRODUCER_INSTITUTION_NAME***	The pprocess_owner_institution_name attribute specifies the name of the institution that owns the software process.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/process_owner_institution_name**	
			ASCII_Short_String_Collapsed
msn_surface:**product_completion_status** *TELEMETRY.* ***PRODUCT_COMPLETION_STATUS***	The product_completion_status attribute indicates whether or not a product is complete or is in one of a number of incomplete states. Sample values might indicate that all portions of the product have been downlinked and received correctly, that all portions have not yet been received, or that the product contains transmission errors. The specific values are mission-dependent.		
		1) PARTIAL 2) COMPLETE	ASCII_Short_String_Collapsed
creation_date_time *IDENTIFICATION.* ***PRODUCT_CREATION_TIME***	The creation_date_time attribute provides a date and time when the object was created. **InSight Specific:** *This represents the Earth time when the product was created, not the time the spacecraft acquired the data.*	**1)/Product_Collection/File_Area_Inventory/File/creation_date_time** **2)/Product_XML_Schema/File_Area_XML_Schema[*1]/File/creation_date_time** **3)/Product_Observational/File_Area_Observational/File/creation_date_time** **4)/Product_Browse/File_Area_Browse/File/creation_date_time**	
			ASCII_Date_Time_YMD
logical_identifier *IDENTIFICATION.* ***PRODUCT_ID***	A logical identifier identifies the set of all versions of an object. It is an object identifier without a version.	**1)/Product_Collection/Identification_Area/logical_identifier** **2)/Product_XML_Schema/Identification_Area/logical_identifier** **3)/Product_File_Text/Identification_Area/logical_identifier** **4)/Product_Document/Identification_Area/logical_identifier** **5)/Product_Observational/Identification_Area/logical_identifier** **6)/Product_Browse/Identification_Area/logical_identifier**	
			ASCII_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
file_name *IDENTIFICATION.* ***PRODUCT_ID***	The file_name attribute provides the name of a file. **InSight Specific:** *For InSight this contains the VICAR PRODUCT_ID, which is the filename minus the extension.*	**1)/Product_Collection/File_Area_Inventory/File/file_name** **2)/Product_Observational/File_Area_Observational_Supplemental[*]/File/file_name** **3)/Product_XML_Schema/File_Area_XML_Schema[*]/File/file_name** **4)/Product_File_Text/File_Area_Text/File/file_name** **5)/Product_Document/Document/Document_Edition/Document_File/file_name** **6)/Product_Observational/File_Area_Observational/File/file_name** **7)/Product_Observational/File_Area_Observational_Supplemental/File/file_name** **8)/Product_Browse/File_Area_Browse/File/file_name**	
			ASCII_Short_String_Collapsed
alternate_id *IDENTIFICATION.* ***PRODUCT_ID***	The alternate_id attribute provides an additional identifier supplied by the data provider. **InSight Specific:** *For InSight this contains the VICAR PRODUCT_ID, which is the filename minus the extension.*	**1)/Product_Observational/Identification_Area/Alias_List/Alias/alternate_id**	
			ASCII_Short_String_Collapsed
local_identifier_reference *IDENTIFICATION.* ***PRODUCT_ID***	The local_identifier_reference attribute provides the value of the local_identifier of the entity described by the referencing class. Note that a local_identifier attribute, with the same value as this local_identifier_reference, must be present within the label.	**1)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Local_Internal_Reference/local_identifier_reference** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Local_Internal_Reference/local_identifier_reference** **3)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Local_Internal_Reference/local_identifier_reference** **4)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Local_Internal_Reference/local_identifier_reference** **5)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[2]/Coordinate_Space_Reference/Local_Internal_Reference/local_identifier_reference** **6)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[1]/Coordinate_Space_Reference/Local_Internal_Reference/local_identifier_reference** **7)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Local_Internal_Reference/local_identifier_reference** **8)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Local_Internal_Reference/local_identifier_reference**	
			ASCII_Local_Identifier_Reference

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
cart:**projection_azimuth** *SURFACE_PROJECTION_PARMS.* ***PROJECTION_AZIMUTH***	The projection_azimuth attribute specifies the azimuth of the horizontal center of projection for the Perspective lander map projection (loosely, where the camera model is pointing).	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective/projection_azimuth	
			ASCII_Real *Units_of_Angle*
cart:**projection_elevation** *SURFACE_PROJECTION_PARMS.* ***PROJECTION_ELEVATION***	The projection_elevation attribute specifies the elevation of the vertical center of projection (loosely, where the camera is pointing). For Perspective lander map projection, this applies to the single output camera model; for Cylindrical-Perspective it applies to each columns output camera model, before the rotation specified by Vector_Projection_Z_Axis.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective/projection_elevation **2)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical_Perspective/projection_elevation	
			ASCII_Real *Units_of_Angle*
cart:**projection_elevation_line** *SURFACE_PROJECTION_PARMS.* ***PROJECTION_ELEVATION_LINE***	The projection_elevation_line attribute specifies the image line which corresponds to the projection_elevation attribute for each column of the Cylindrical-Perspective projection, before the rotation specified by Vector_Projection_Z_Axis.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical_Perspective/projection_elevation_line	
			ASCII_Real
cart:**x_position** *SURFACE_PROJECTION_PARMS.* ***PROJECTION_ORIGIN_VECTOR***	The x component of a Cartesian position vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/Vector_Projection_Origin/x_position **2)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Ground_Location/x_position	
			ASCII_Real *Units_of_Length*
cart:**y_position** *SURFACE_PROJECTION_PARMS.* ***PROJECTION_ORIGIN_VECTOR***	The y component of a Cartesian position vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/Vector_Projection_Origin/y_position **2)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Ground_Location/y_position	
			ASCII_Real *Units_of_Length*
cart:**z_position** *SURFACE_PROJECTION_PARMS.* ***PROJECTION_ORIGIN_VECTOR***	The z component of a Cartesian position vector.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/Vector_Projection_Origin/z_position **2)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Ground_Location/z_position	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
			ASCII_Real *Units_of_Length*
cart:**Vector_Projection_Origin** *SURFACE_PROJECTION_PARMS.* ***PROJECTION_ORIGIN_VECTOR***	The Vector_Projection_Origin class specifies the location of the origin of the projection. For Polar and Cylindrical projections, this is the XYZ point from which all the azimuth/elevation rays emanate. For the Cylindrical-Perspective projection, this defines the center of the circle around which the synthetic camera orbits. For Orthographic, Orthorectified, and Vertical projections, this optional keyword specifies the point on the projection plane that serves as the origin of the projection (i.e. all points on a line through this point in the direction of PROJECTION_Z_AXIS_VECTOR will be ocated at X=Y=0 in the projection). If not present, (0,0,0) should be assumed. This translation is generally not necessary and not often used; the (X|Y)_AXIS_MINIMUM and (X|Y)_AXIS_MAXIMUM fields allow the mosaic to be located arbitrarily in the projection plane.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/Vector_Projection_Origin**	
		1) *geom:x_position* 2) *geom:y_position* 3) *geom:z_position* 4) *cart:Vector_Cartesian_Position_Base*	
value_offset *DERIVED_IMAGE_PARMS.* ***RADIANCE_OFFSET***	The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: Ov = (Sv * scaling_factor) + value_offset. The default value is 0.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Element_Array/value_offset** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Element_Array/value_offset**	
			ASCII_Real
unit *DERIVED_IMAGE_PARMS.* ***RADIANCE_OFFSET__UNIT*** *DERIVED_IMAGE_PARMS.* ***RADIANCE_SCALING_FACTOR__UNIT***	The unit attribute provides the unit of measurement. **InSight Specific:** *This defines the unit of measurement for the data (image pixels) themselves.*	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Element_Array/unit** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Element_Array/unit**	
			UTF8_Short_String_Collapsed
scaling_factor *DERIVED_IMAGE_PARMS.* ***RADIANCE_SCALING_FACTOR***	The scaling_factor attribute is the scaling factor to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: Ov = (Sv * scaling_factor) + value_offset. The default value is 1.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Element_Array/scaling_factor** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Element_Array/scaling_factor**	
			ASCII_Real
img:**radiometric_type** *DERIVED_IMAGE_PARMS.* ***RADIOMETRIC_CORRECTION_TYPE***	The radiometric_type defines the specific type of radiance measurement. Possible values include "Radiance", "Spectral Radiance", "Scaled Spectral Radiance". Note: There are many more possible values, and this definition can be updated to include more examples over time. **InSight Specific:** *The InSight pipeline uses 'MIPLRAD' (see description in main body of SIS).*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Radiometric_Correction/radiometric_type**	
			ASCII_Short_String_Collapsed
img_surface:**Vector_Range_Origin** *DERIVED_IMAGE_PARMS.* ***RANGE_ORIGIN_VECTOR***	The Vector_Range_Origin class specifies the 3-D space from which the Range values are measured in a Range RDR. This will normally be the same as the C point of the camera. It is expressed in the coordinate system specified by the Coordinate_Space_Reference class.		
		1) *img_surface:x_position* 2) *img_surface:y_position* 3) *img_surface:z_position*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
img_surface:**x_position** *DERIVED_IMAGE_PARMS.* ***RANGE_ORIGIN_VECTOR***	The x component of a Cartesian position vector.		
			ASCII_Real *Units_of_Length*
img_surface:**y_position** *DERIVED_IMAGE_PARMS.* ***RANGE_ORIGIN_VECTOR***	The y component of a Cartesian position vector.		
			ASCII_Real *Units_of_Length*
img_surface:**z_position** *DERIVED_IMAGE_PARMS.* ***RANGE_ORIGIN_VECTOR***	The z component of a Cartesian position vector.		
			ASCII_Real *Units_of_Length*
msn_surface:**received_packets** *TELEMETRY.* ***RECEIVED_PACKETS***	The received_packets attribute provides the total number of telemetry packets actually used to construct this data product. cf. expected_packets.		
			ASCII_NonNegative_Integer

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**index_value_number** *. ***REFERENCE_COORD_SYSTEM_INDEX*** *_COORDINATE_SYSTEM. ***COORDINATE_SYSTEM_INDEX*** IDENTIFICATION. ***ROVER_MOTION_COUNTER*** *_ARTICULATION_STATE. ***ARTICULATION_DEVICE_TEMP_COUNT***	The index_value_number attribute provides the value with no applicable units as named by the associated index_id or index_name. **InSight Specific:** *For InSight, the Device_Temperature instance contains raw temperature counts. The rest of the instances contain coordinate space indices.*	**1)**/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_value_number **2)**/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_value_number **3)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_value_number **4)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_value_number **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_value_number **6)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_value_number **7)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_value_number **8)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_value_number **9)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_value_number **10)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[2]/Device_Temperature/Device_Temperature_Index/index_value_number **11)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[1]/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_value_number **12)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Present/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_value_number **13)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_value_number **14)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Motion_Counter/Motion_Counter_Index[*]/index_value_number	
			ASCII_Real
		1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Sampling/sample_bits	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
img:**sample_bits** *IMAGE_DATA.* ***SAMPLE_BIT_MASK***	The sample_bits attribute specifies the logical or active number of bits in the data, which is distinct from the physical number of bits (for example, encoding 12-bit data within 16-bit words). These logical bits are stored in the low order (least significant) bits, with unused bits filled with 0 (or 1 for negative integers to preserve a two's complement representation). This is distinct from the valid data range (specified by valid_minimum and valid_maximum in Special_Constants class) because all values, including missing/invalid flag values, must fit within the sample_bits. The intent is that the data should be able to be sent through a communication channel that passes only sample_bits with no loss in fidelity. **InSight Specific:** *In VICAR this quantity is maintained as a bit mask; this is converted to a number of bits for PDS4.*		ASCII_Short_String_Collapsed
img:**processing_venue** *INSTRUMENT_STATE_PARMS.* ***SAMPLE_BIT_METHOD***	The processing_venue attribute specifies where the processing described by the parent class was performed.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Radiometric_Correction/processing_venue** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Filter_Array/processing_venue** **3)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Sampling/Companding/processing_venue** **4)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Shutter_Subtraction/processing_venue** **5)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Shutter_Subtraction/processing_venue**	
		1) Onboard Hardware 2) Onboard Software 3) Onboard Both 4) Onboard 5) Ground 6) Ground Refined 7) None	ASCII_Short_String_Collapsed
img:**active_flag** *OBSERVATION_REQUEST_PARMS.* ***SHUTTER_CORRECTION_MODE***	The active_flag attribute indicates whether or not the data processing described by the parent class is active. In general, the presence of the parent class implies it is active and thus active_flag is optional. The primary purpose for active_flag is to either explicitly indicate a correction is not active (for example, if it normally is but was explicitly turned off), or to be able to provide parameters for historical reasons that may no longer be relevant to a current correction.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Radiometric_Correction/active_flag** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Shutter_Subtraction/active_flag** **3)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Shutter_Subtraction/active_flag**	
			ASCII_Boolean
img:**shutter_subtraction_mode** *OBSERVATION_REQUEST_PARMS.* ***SHUTTER_CORRECTION_MODE***	The shutter_subtraction_mode specifies whether shutter subtraction will be performed, or if it is dependent on the exposure_duration_threshold_count.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Shutter_Subtraction/shutter_subtraction_mode** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Shutter_Subtraction/shutter_subtraction_mode**	
		1) True 2) Conditional	ASCII_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**solar_azimuth** *SITE_DERIVED_GEOMETRY_PARMS.* ***SOLAR_AZIMUTH*** *SITE_DERIVED_GEOMETRY_PARMS.* ***SOLAR_AZIMUTH__UNIT***	The solar_azimuth attribute specifies one of two angular measurements indicating the direction to the Sun as measured from a specific point on the surface of a planet (eg., from a lander or rover). The positive direction of azimuth is set by the positive_azimuth_direction attribute in the reference coordinate space. The azimuth is measured in the clockwise or counterclockwise direction (as viewed from above) with the meridian passing through the positive spin axis of the planet (i.e., the north pole) defining the zero reference. **InSight Specific:** *Computed using SPICE.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/solar_azimuth**	
			ASCII_Real *Units_of_Angle*
geom:**solar_elevation** *SITE_DERIVED_GEOMETRY_PARMS.* ***SOLAR_ELEVATION*** *SITE_DERIVED_GEOMETRY_PARMS.* ***SOLAR_ELEVATION__UNIT***	The solar_elevation attribute specifies one of two angular measurements indicating the direction to the Sun as measured from a specific point on the surface of a planet (eg., from a lander or rover). The positive direction of the elevation is set by the positive_elevation_direction attribute in the reference coordinate space. The elevation is measured from the plane which is normal to the line passing between the surface point and the planet's center of mass, and that intersects the surface point. **InSight Specific:** *Computed using SPICE.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/solar_elevation**	
			ASCII_Real *Units_of_Angle*
solar_longitude *IDENTIFICATION.* ***SOLAR_LONGITUDE***	The solar_longitude attribute provides the angle between the body-Sun line at the time of interest and the body-Sun line at its vernal equinox. **InSight Specific:** *This provides a measure of season on a target body, with values of 0 to 90 degrees representing northern spring, 90 to 180 degrees representing northern summer, 180 to 270 degrees representing northern autumn and 270 to 360 degrees representing northern winter. Note that this duplicates the solar_longitude in the pds: dictionary.*	**1)/Product_Observational/Observation_Area/Time_Coordinates/solar_longitude**	
			ASCII_Real *Units_of_Angle*
msn:**solar_longitude** *IDENTIFICATION.* ***SOLAR_LONGITUDE***	solar_longitude is the solar longitude, as defined in the main PDS4 data dictionary. **InSight Specific:** *This provides a measure of season on a target body, with values of 0 to 90 degrees representing northern spring, 90 to 180 degrees representing northern summer, 180 to 270 degrees representing northern autumn and 270 to 360 degrees representing northern winter. Note that this duplicates the solar_longitude in the pds: dictionary.*		
			ASCII_Real *Units_of_Angle*
	The solution_id attribute specifies the unique identifier for the solution set to which the values in the group belong.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Present/Coordinate_Space_Indexed/solution_id**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**solution_id** **_COORDINATE_SYSTEM. **SOLUTION_ID***	For certain kinds of information, such as pointing correction (pointing models) and rover localization (coordinate system definitions), the "true" value is unknown and only estimates of the true value exist. Thus, more than one set of estimates may exist simultaneously, each valid for its intended purpose. Each of these sets is called a "solution" to the unknown true value. The solution_id attribute is used to identify which solution is being expressed by the containing group. No specific naming convention is defined here, however it is recommended that projects adopt one. The intent is to be able to identify who created the solution, and why. Possible components of the naming convention include user, institution, purpose, request ID, version, program, date/time. **InSight Specific:** *Must be globally unique across all coordinate system instances, i.e. it cannot be reused to define the same coordinate system instance differently. Different coordinate system instances (for example, different values of the RMC index) may share the same SOLUTION_ID. See also REFERENCE_COORD_SYSTEM_NAME and REFERENCE_COORD_SYSTEM_SOLN_ID. The SOLUTION_ID should be the same identifier used in the PLACES rover localization database. The special name 'telemetry' is used for values telemetered from the rover. If SOLUTION_ID is absent, 'telemetry' should be assumed.*		ASCII_Short_String_Collapsed
lidvid_reference *IDENTIFICATION. **SOURCE_PRODUCT_ID***	The lidvid_reference attribute provides the logical_identifier plus version_id, which uniquely identifies a product. **InSight Specific:** *References of type 'data_to_raw_product' point at the raw products (aka EDRs) that ultimately provided the data used to make this product.*	**1)/Product_File_Text/Reference_List/Source_Product_Internal[*]/lidvid_reference** **2)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product[*]/Internal_Reference/lidvid_reference** **3)/Product_Observational/Reference_List/Source_Product_Internal[*]/lidvid_reference** **4)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product/Internal_Reference/lidvid_reference** **5)/Product_Observational/Reference_List/Internal_Reference/lidvid_reference** **6)/Product_Observational/Reference_List/Source_Product_Internal/lidvid_reference**	
			ASCII_LIDVID
msn:**spacecraft_clock_partition** *IDENTIFICATION.* ***SPACECRAFT_CLOCK_CNT_PARTITION***	The spacecraft_clock_partition provides the clock partition active for the spacecraft_clock attribute. **InSight Specific:** *Always 1 for InSight.*		
			ASCII_Integer
msn:**spacecraft_clock_start** *IDENTIFICATION.* ***SPACECRAFT_CLOCK_START_COUNT***	The spacecraft_clock_start is the value of the spacecraft clock at the beginning of the observation.		
			ASCII_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
msn:**spacecraft_clock_stop** *IDENTIFICATION.* ***SPACECRAFT_CLOCK_STOP_COUNT***	The spacecraft_clock_stop is the value of the spacecraft clock at the end of the observation. spacecraft_clock_stop should only be used if there's also a spacecraft_clock_start value.		
			ASCII_Short_String_Collapsed
geom:**spice_kernel_file_name** *TELEMETRY.* ***SPICE_FILE_NAME***	The spice_kernel_file_name attribute provides the file name of a SPICE kernel file used to process the data or to produce geometric quantities given in the label.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/SPICE_Kernel_Files/SPICE_Kernel_Identification/spice_kernel_file_name**	
			ASCII_File_Name
cart:**start_azimuth** *SURFACE_PROJECTION_PARMS.* ***START_AZIMUTH***	The start_azimuth specifies the angular distance from a fixed reference position at which an image or observation starts. Azimuth is measured in a spherical coordinate system, in a plane normal to the principal axis. Azimuth values increase according to the right hand rule relative to the positive direction of the principal axis of the spherical coordinate system. For lander map projections, this attribute specifies the azimuth of the left edge of the output map. Applies to Cylindrical and Cylindrical-Perspective lander map projections only.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/start_azimuth** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical_Perspective/start_azimuth**	
			ASCII_Real *Units_of_Angle*
geom:**start_azimuth** **_DERIVED_GEOMETRY_PARMS.* ***START_AZIMUTH***	The start_azimuth attribute specifies the angular distance from a fixed reference position at which an image or observation starts. Azimuth is measured in a spherical coordinate system, in a plane normal to the principal axis. Azimuth values increase according to the right hand rule relative to the positive direction of the principal axis of the spherical coordinate system. When applied to a site or surface projection coordinate space, specifies the azimuth of the left edge of the output map. Applies to Cylindrical and Cylindrical-Perspective projections only.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/start_azimuth**	
			ASCII_Real *Units_of_Angle*
start_date_time *IDENTIFICATION.* ***START_TIME***	The start_date_time attribute provides the date and time appropriate to the beginning of the product being labeled. **InSight Specific:** *The time period of interest is returned from SPICE subroutines and is based on the beginning of data acquisition.*	**1)/Product_Collection/Context_Area/Time_Coordinates/start_date_time** **2)/Product_Observational/Observation_Area/Time_Coordinates/start_date_time**	
			ASCII_Date_Time_YMD_UTC
img_surface:**stereo_match_id** *IDENTIFICATION.* ***STEREO_MATCH_ID***	The stereo_match_id attribute specifies which other image this image matches with for stereo processing. If used for a mission, the two images making up a stereo pair should share the same stereo_match_id value. **InSight Specific:** *The stereo_match_id is derived from the image_id (see SIS Appendix A). Numeric values indicate commanded stereo pairs; alpha values indicate ground-assigned stereo pairs. In order for an image pair to be matched for stereo, the sequence_id, mesh_id, and sol also need to match, in addition to stereo_match_id.*		
			ASCII_Short_String_Collapsed
cart:**stop_azimuth** *SURFACE_PROJECTION_PARMS.* ***STOP_AZIMUTH***	The stop_azimuth attribute pecifies the angular distance from a fixed reference position at which an image or observation stops. Azimuth is measured in a spherical coordinate system, in a plane normal to the principal axis. Azimuth values increase according to the right hand rule	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/stop_azimuth** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical_Perspective/stop_azimuth**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	relative to the positive direction of the principal axis of the spherical coordinate system. For lander map projections, this attribute specifies the azimuth of the right edge of the output map. Applies to Cylindrical and Cylindrical-Perspective lander map projections only.		ASCII_Real *Units_of_Angle*
geom:**stop_azimuth** **_DERIVED_GEOMETRY_PARMS.* ***STOP_AZIMUTH***	The stop_azimuth attribute specifies the angular distance from a fixed reference position at which an image or observation stops. Azimuth is measured in a spherical coordinate system, in a plane normal to the principal axis. Azimuth values increase according to the right hand rule relative to the positive direction of the principal axis of the spherical coordinate system. When applied to a site or surface projection coordinate space, specifies the azimuth of the right edge of the output map. Applies to Cylindrical and Cylindrical-Perspective projections only.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/stop_azimuth**	
			ASCII_Real *Units_of_Angle*
stop_date_time *IDENTIFICATION.* ***STOP_TIME***	The stop_date_time attribute provides the date and time appropriate to the end of the product being labeled. **InSight Specific:** *The time period of interest is returned from SPICE suburoutines and is based on the end of data acquisition.*	**1)/Product_Collection/Context_Area/Time_Coordinates/stop_date_time** **2)/Product_Observational/Observation_Area/Time_Coordinates/stop_date_time**	
			ASCII_Date_Time_YMD_UTC
cart:**Vector_Surface_Ground_Location** *SURFACE_MODEL_PARMS.* ***SURFACE_GROUND_LOCATION***	The Vector_Surface_Ground_Location class specifies any point on the surface. This point is measured in the coordinates specified by the Coordinate_Space reference in the Surface_Model_Parameters class.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Ground_Location**	
		1) *geom:x_position* 2) *geom:y_position* 3) *geom:z_position* 4) *cart:Vector_Cartesian_Position_Base*	
cart:**surface_model_type** *SURFACE_MODEL_PARMS.* ***SURFACE_MODEL_TYPE***	Specifies the type of surface used for the reprojection performed during the mosaicking process. Valid values: Planar - refers to a flat planar model; Spherical refers to a spherical model where the camera is at the center of the sphere.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/surface_model_type**	
		1) Spherical 2) Planar	ASCII_Short_String_Collapsed
cart:**Vector_Surface_Normal** *SURFACE_MODEL_PARMS.* ***SURFACE_NORMAL_VECTOR***	The Vector_Surface_Normal class specifies a vector normal to the planar surface. This vector is measured in the coordinates specified by the Coordinate_Space reference in the Surface_Model_Parameters class.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Normal**	
		1) *cart:x_unit* 2) *cart:y_unit* 3) *cart:z_unit* 4) *cart:Vector_Cartesian_Unit_Base*	
cart:**x_unit** *SURFACE_MODEL_PARMS.* ***SURFACE_NORMAL_VECTOR***	The x component of a unit vector.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Normal/x_unit**	
			ASCII_Real
cart:**y_unit** *SURFACE_MODEL_PARMS.* ***SURFACE_NORMAL_VECTOR***	The y component of a unit vector.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Normal/y_unit**	
			ASCII_Real

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
cart:**z_unit** *SURFACE_MODEL_PARMS.* ***SURFACE_NORMAL_VECTOR***	The z component of a unit vector.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar/Vector_Surface_Normal/z_unit**	
			ASCII_Real
img_surface:**Placement_Target_Instrument** *DERIVED_IMAGE_PARMS.* ***TARGET_INSTRUMENT***	Indicates the instrument that is referred to by the product. This is not the same as the instrument that acquired the product. For example, on InSight instrument placement products, it defines which instrument is being placed.		
		1) *name* 2) *Internal_Reference*	
msn_surface:**provider_id** *TELEMETRY.* ***TELEMETRY_PROVIDER_ID***	The provider_id attribute identifies the organization or subsystem that supplied the telemetry data product to the producer of the raw (EDR) PDS data product. This is typically (but not always) the organization responsible for reassembling packetized data into a single product. These may vary by mission so the permissible values should be set by the mission dictionaries. **InSight Specific:** *For InSight the subsystem is TTACS*		
			ASCII_Short_String_Collapsed
msn_surface:**telemetry_source_name** *TELEMETRY.* ***TELEMETRY_SOURCE_NAME***	The telemetry_source_name specifies the name source of the telemetry data described in the parent class. **InSight Specific:** *For InSight this is either 'TDS' for the telemetry server, or the name of the SFDU file or CCSDS packet directory used as input to the EDR generator.*		
			ASCII_Short_String_Collapsed
msn_surface:**telemetry_source_sclk_start** *TELEMETRY.* ***TELEMETRY_SOURCE_SCLK_START***	The telemetry_source_sclk_start attribute specifies the value of the spacecraft clock (in seconds) at the creation time of the source product from which this product was derived. **InSight Specific:** *This is the time in the CCSDS header. Used to find all the matching packets for one product.*		
			ASCII_Short_String_Collapsed
msn_surface:**telemetry_source_start_time** *TELEMETRY.* ***TELEMETRY_SOURCE_START_TIME***	The telemetry_source_start_time specifies the creation time of the source product from which this product was derived. It is the same as the telemetry_source_sclk_start converted to Spacecraft Event Time (SCET).		
			ASCII_Date_Time_YMD_UTC
msn_surface:**transport_protocol** *TELEMETRY.* ***TELEMETRY_SOURCE_TYPE***	The transport_protocol attribute specifies the protocol used in the creation of the telemetry data products by the subsystem which generates the telemetry stream. **InSight Specific:** *For InSight this is always SFDU.*		
		1) SFDU 2) Data Product	ASCII_Short_String_Collapsed
proc:**program_user** ***. USER***	The program_user attribute specifies the username of the person responsible for running the software prgoram.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program[*]/program_user** **2)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program/program_user**	
			ASCII_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
cart:**x_axis_maximum** *SURFACE_PROJECTION_PARMS.* ***X_AXIS_MAXIMUM*** *SURFACE_PROJECTION_PARMS.* ***X_AXIS_MAXIMUM__UNIT***	The x_axis_maximum attribute specifies the value of the X coordinate (measured in the projection frame) of a Vertical, Orthographic or Orthorectified lander map projection at the top of the image. Note that +X is at the top of the image and +Y is at the right, so +X corresponds to North in the Vertical projection.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/x_axis_maximum** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/x_axis_maximum**	
			ASCII_Real *Units_of_Length*
cart:**x_axis_minimum** *SURFACE_PROJECTION_PARMS.* ***X_AXIS_MINIMUM*** *SURFACE_PROJECTION_PARMS.* ***X_AXIS_MINIMUM__UNIT***	The x_axis_minimum attribute specifies the value of the X coordinate (measured in the projection frame) of a Vertical, Orthographic or Orthorectified lander map projection at the bottom of the image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/x_axis_minimum** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/x_axis_minimum**	
			ASCII_Real *Units_of_Length*
cart:**y_axis_maximum** *SURFACE_PROJECTION_PARMS.* ***Y_AXIS_MAXIMUM*** *SURFACE_PROJECTION_PARMS.* ***Y_AXIS_MAXIMUM__UNIT***	The y_axis_minimum attribute specifies the value of the Y coordinate (measured in the projection frame) of a Vertical, Orthographic or Orthorectified lander map projection at the right edge of the image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/y_axis_maximum** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/y_axis_maximum**	
			ASCII_Real *Units_of_Length*
cart:**y_axis_minimum** *SURFACE_PROJECTION_PARMS.* ***Y_AXIS_MINIMUM*** *SURFACE_PROJECTION_PARMS.* ***Y_AXIS_MINIMUM__UNIT***	The y_axis_minimum attribute specifies the value of the Y coordinate (measured in the projection frame) of a Vertical, Orthographic or Orthorectified lander map projection at the left edge of the image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/y_axis_minimum** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/y_axis_minimum**	
			ASCII_Real *Units_of_Length*
cart:**zero_elevation_line** *SURFACE_PROJECTION_PARMS.* ***ZERO_ELEVATION_LINE***	The zero_elevation_line attribute specifies the image line representing 0.0 degree elevation. Applies to Cylindrical lander map projections.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/zero_elevation_line**	
			ASCII_Real
Alias	The Alias class provides a single alternate name and identification for this product in this or some other archive or data system.	**1)/Product_Observational/Identification_Area/Alias_List/Alias**	
		1) *alternate_id* 2) *alternate_title* 3) *comment*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
Alias_List	The Alias_List class provides a list of paired alternate names and identifications for this product in this or some other archive or data system.	**1)/Product_Observational/Identification_Area/Alias_List**	
		1) *Alias*	
Array_2D_Image	The Array 2D Image class is an extension of the Array 2D class and defines a two dimensional image.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image**	
		1) *offset* 2) *axes* 3) *name* 4) *local_identifier* 5) *axis_index_order* 6) *md5_checksum* 7) *description* 8) *Array_2D* 9) *Display_2D_Image* 10) *Axis_Array* 11) *Element_Array* 12) *Special_Constants* 13) *Object_Statistics* 14) *Digital_Object* 15) *Local_Internal_Reference*	
Array_3D_Image	The Array 3D Image class is an extension of the Array 3D class and defines a three dimensional image.	**1)/Product_Observational/File_Area_Observational/Array_3D_Image**	
		1) *offset* 2) *axes* 3) *name* 4) *local_identifier* 5) *axis_index_order* 6) *md5_checksum* 7) *description* 8) *Array_3D* 9) *Axis_Array* 10) *Element_Array* 11) *Special_Constants* 12) *Object_Statistics* 13) *Digital_Object* 14) *Local_Internal_Reference*	
geom:**Articulation_Device_Parameters**	The Articulation_Device_Parameters class contains those attributes and sub-classes that describe an articulation device. An articulation device is anything that can move independently of the spacecraft to which it is attached. Examples include mast heads, wheel bogies, arms, filter wheel, scan platforms. **InSight Specific:** *For InSight the articulation devices are ARM and GRAPPLE.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]**	
		1) *geom:device_id* 2) *geom:device_name* 3) *geom:device_mode* 4) *geom:device_phase* 5) *geom:selected_instrument_id* 6) *geom:Coordinate_Space_Present* 7) *Device_Angle* 8) *Device_Temperature* 9) *Vector_Device_Gravity*	
author_list	The author_list attribute contains a semi-colon-separated list of names of people to be cited as authors of the associated product. The general format for individual	**1)/Product_Collection/Identification_Area/Citation_Information/author_list** **2)/Product_Document/Identification_Area/Citation_Information/author_list**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	names is: SURNAME, GIVEN NAME(s). Initials may be used in lieu of given name(s). If the name contains a suffix ("Jr.", "Sr.", "III", etc.) it should be placed before the comma (,). Do not include the word "and" before the final author. All authors should be listed explicitly - do not elide the list using "et al.".		UTF8_Text_Preserved
img:**Autoexposure**	The Autoexposure class contains attributes used to identify or describe the algorithm used to automatically calculate the proper exposure time. This is generally based on some kind of histogram analysis. The specific autoexposure algorithm used is defined in the processing_algorithm attribute, and the specific set of attributes needed to describe it will vary based on the algorithm. Examples of autoexposure algorithms include "Maki 2003" used on MER, MSL ECAMs, M2020 ECAMS; "Maurice 2012" used on MSL ChemCam; "Smith 1997" used on Mars Pathfinder Imager.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/Autoexposure**	
		1) *img:auto_exposure_data_cut* 2) *img:active_flag* 3) *img:auto_exposure_percent* 4) *img:processing_venue* 5) *img:auto_exposure_pixel_fraction* 6) *img:processing_algorithm* 7) *img:max_auto_exposure_iteration_count* 8) *img:sequence_number* 9) *img:Data_Processing*	
Axis_Array	The Axis Array class is used as a component of the array class and defines an axis of the array.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Axis_Array[*]** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Axis_Array[*]**	
		1) *axis_name* 2) *local_identifier* 3) *elements* 4) *unit* 5) *sequence_number* 6) *Band_Bin_Set*	
axis_index_order	The axis_index_order attribute provides the axis index that varies fastest with respect to storage order.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/axis_index_order** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/axis_index_order**	
		1) Last Index Fastest	ASCII_Short_String_Collapsed
axis_name	The axis_name attribute provides a word or combination of words by which the axis is known.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Axis_Array[*]/axis_name** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Axis_Array[*]/axis_name**	
			ASCII_Short_String_Collapsed
disp:**blue_channel_band**	The blue_channel_band attribute identifies the number of the band, along the band axis, that should be loaded, by default, into the blue channel of a display device. The first band along the band axis has band number 1.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Color_Display_Settings/blue_channel_band**	
			ASCII_Integer

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**c0**	The first coefficient of a polynomial.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Radial_Terms/c0** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Entrance_Terms/c0** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Radial_Terms/c0**	
			ASCII_Real
geom:**c1**	The second coefficient of a polynomial.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Radial_Terms/c1** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Entrance_Terms/c1** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Radial_Terms/c1**	
			ASCII_Real
geom:**c2**	The third coefficient of a polynomial.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Radial_Terms/c2** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Entrance_Terms/c2** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Radial_Terms/c2**	
			ASCII_Real
geom:**CAHV_Model**	The CAHV model is a linear, perspective-projection camera model (equivalent to a pinhole camera). It consists of four 3-vectors (C,A,H,V) that describe the internal and external camera model parameters needed to translate between 2D image coordinates and 3D world coordinates. C (Vector_Center) is the 3D position of the pinhole (center of the entrance pupil). A (Vector_Axis) is a unit vector normal to the image plane pointing outward. H (Vector_Horizontal) is a composite vector encoding three quantities: H' (a vector in the image plane perpendicular to the vertical columns), Hs (the distance between the lens center and image plane, measured in horizontal pixels), and Hc (the horizontal image coordinate directly under C when moving parallel to A). V (Vector_Vertical) similarly composites the analogous V', Vs, and Vc in the vertical direction.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model**	
		1) *geom:Vector_Center* 2) *geom:Vector_Axis* 3) *geom:Vector_Horizontal* 4) *geom:Vector_Vertical*	
geom:**CAHVOR_Model**	The CAHVOR model is built upon CAHV (see CAHV_Model), adding radial (barrel or pincushion) distortion to the linear	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	model. It adds two more 3-vectors to CAHV. O (Vector_Optical) is a unit vector representing the axis of symmetry for the radial distortion. R (Radial_Terms) contains the coefficients of a polynomial function that describes the radial distortion.	1) *geom:CAHV_Model* 2) *geom:Vector_Optical* 3) *geom:Vector_Center* 4) *geom:Radial_Terms* 5) *geom:Vector_Axis* 6) *geom:Vector_Horizontal* 7) *geom:Vector_Vertical*	
geom:**CAHVORE_Model**	The CAHVORE model is built upon CAHVOR (see CAHVOR_Model), adding support for fisheye lenses. It adds one more 3-vector and two scalars to CAHVOR. E (Entrance_Terms) contains the coefficients of a polynomial function used to model movement of the entrance pupil. The two scalars, cahvore_model_type and cahvore_model_parameter, together specify the type of lens being modeled.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model**	
		1) *geom:cahvore_model_type* 2) *geom:cahvore_model_parameter* 3) *geom:CAHVOR_Model* 4) *geom:Entrance_Terms* 5) *geom:Vector_Optical* 6) *geom:Vector_Center* 7) *geom:Radial_Terms* 8) *geom:Vector_Axis* 9) *geom:Vector_Horizontal* 10) *geom:Vector_Vertical*	
geom:**cahvore_model_parameter**	The cahvore_parameter_type attribute is a scalar floating-point number used for CAHVORE Type 3 models (see cahvore_model_type). If the parameter is 1.0, the model is identical to type 1; if 0.0, it is identical to type 2. Most fish-eye lenses use a value in between.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/cahvore_model_parameter**	
			ASCII_Real
geom:**cahvore_model_type**	The cahvore_model_type attribute indicates which variant of the CAHVORE model to use. Type 1 is a perspective-projection model, similar to CAHV and CAHVOR except for the moving entrance pupil. Type 2 is a fish-eye lens model reflecting fundamentally different geometry. Type 3 is a generalization that includes the first two, and is used for most fisheye-type lenses (see cahvore_model_parameter).	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/cahvore_model_type**	
		1) 1 2) 2 3) 3	ASCII_Integer
cart:**Camera_Model_Offset**	The Camera_Model_Offset class specifies the location of the image origin with respect to the camera model's origin. For CAHV/CAHVOR models, this origin is not the center of the camera, but is the upper-left corner of the "standard"-size image, which is encoded in the CAHV vectors. Applies to the Perspective lander map projection.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective/Camera_Model_Offset**	
		1) *cart:line* 2) *cart:sample*	
geom:**Camera_Model_Parameters**	A camera model describes the mathematical relationship between the coordinates of a point in 3-dimensional space and its projection onto a 2-dimensional image plane. There are numerous types of camera models.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters**	
		1) *geom:model_type* 2) *geom:calibration_source_id* 3) *geom:solution_id* 4) *Internal_Reference* 5) *geom:CAHVORE_Model* 6) *geom:Coordinate_Space_Reference* 7) *geom:Quaternion_Model_Transform* 8) *geom:Vector_Model_Transform* 9) *CAHVOR_Model* 10) *CAHV_Model*	
cart:**Cartography**		**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Cartography class provides a description of how a 3D sphere, spheroid, or elliptical spheroid or the celestial sphere is mapped onto a plane.	1) *cart:Spatial_Domain* 2) *cart:Spatial_Reference_Information* 3) *Local_Internal_Reference*	
Citation_Information	The Citation_Information class provides specific fields often used in citing the product in journal articles, abstract services, and other reference contexts.	**1)/Product_Collection/Identification_Area/Citation_Information** **2)/Product_File_Text/Identification_Area/Citation_Information** **3)/Product_Document/Identification_Area/Citation_Information**	
		1) *author_list* 2) *editor_list* 3) *publication_year* 4) *doi* 5) *keyword* 6) *description*	
Collection	The Collection class provides a description of a set of products.	**1)/Product_Collection/Collection**	
		1) *collection_type* 2) *description*	
collection_type	The collection_type attribute provides a classification for the collection.	**1)/Product_Collection/Collection/collection_type**	
		1) Browse 2) Calibration 3) Context 4) Data 5) Document 6) Geometry 7) Miscellaneous 8) SPICE Kernel 9) XML Schema	ASCII_Short_String_Collapsed
disp:**color_display_axis**	The color_display_axis attribute identifies, by name, the axis of an Array (or Array subclass) that is intended to be displayed in the color dimension of a display device. I.e., bands from this dimension will be loaded into the red, green, and blue bands of the display device. The value of this attribute must match the value of one, and only one, axis_name attribute in an Axis_Array class of the associated Array.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Color_Display_Settings/color_display_axis**	
			ASCII_Short_String_Collapsed
disp:**Color_Display_Settings**	The Color_Display_Settings class provides guidance to data users on how to display a multi-banded Array object on a color-capable display device.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Color_Display_Settings**	
		1) *disp:color_display_axis* 2) *comment* 3) *disp:red_channel_band* 4) *disp:green_channel_band* 5) *disp:blue_channel_band*	
img:**Color_Filter_Array**		**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Filter_Array**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
	The Color_Filter_Array class describes whether or not an image was acquired using a Color Filter Array (CFA) and if so, whether and how the CFA pattern was removed. A CFA is a method for making color images using one exposure on a single sensor plane, where microfilters of different wavelengths are put in front of pixels in a specific pattern. The most common pattern is the Bayer pattern, which has a red, blue, and two green pixels in every 2x2 pixel square. Although generally used for RGB color, CFA filters can be of any number and wavelength (see color_filter_array_type).	1) *img:color_filter_array_type* 2) *img:active_flag* 3) *img:color_filter_array_state* 4) *img:processing_venue* 5) *img:processing_algorithm* 6) *img:sequence_number* 7) *img:Data_Processing*	
img:**color_filter_array_state**	Specifies whether the image still has a CFA pattern ("Encoded"), the CFA pattern has been removed ("Decoded") or it never had a pattern ("No CFA").	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Filter_Array/color_filter_array_state**	
		1) Encoded 2) Decoded 3) No CFA	ASCII_Short_String_Collapsed
img:**Color_Processing**	The Color_Processing class contains parameters describing color correction or processing and how the image is represented in color.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing**	
		1) *img:color_space* 2) *img:active_flag* 3) *img:color_component* 4) *img:processing_venue* 5) *img:illuminant* 6) *img:processing_algorithm* 7) *img:encoded_display_gamma* 8) *img:sequence_number* 9) *img:Data_Processing* 10) *img:Onboard_Responsivity* 11) *img:Onboard_Color_Matrix*	
msn_surface:**Command_Execution**	The Command_Execution class contains information about how the command that acquired this data was executed, such as sequence or activity.		
		1) *msn_surface:sequence_id* 2) *msn_surface:sequence_version_id* 3) *msn_surface:sequence_execution_count* 4) *msn_surface:command_sequence_number* 5) *msn_surface:command_source_id* 6) *msn_surface:observation_id* 7) *msn_surface:request_id*	
img:**Commanded_Parameters**		**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Commanded_Parameters class contains attributes used to identify or describe the commands sent to a spacecraft to perform one or more actions resulting in the acquisition of the current data product. These are distinct from similar values in the root Imaging class which indicate the state of the image as acquired.	1) *description* 2) *img:Color_Filter_Array* 3) *img:Color_Processing* 4) *img:Detector* 5) *img:Downsampling* 6) *img:Exposure* 7) *img:Flat_Field_Correction* 8) *img:Focus* 9) *img:Focus_Stack* 10) *img:Frame* 11) *img:Onboard_Compression* 12) *img:Optical_Filter* 13) *img:Radiometric_Correction* 14) *img:Sampling* 15) *img:Shutter_Subtraction* 16) *img:Subframe*	
comment	The comment attribute provides one or more remarks or thoughts relevant to the object.	**1)/Product_Collection/Context_Area/comment** **2)/Product_Collection/Context_Area/Observing_System/Observing_System_Component[*]/Internal_Reference/comment** **3)/Product_Collection/Context_Area/Target_Identification/Internal_Reference/comment** **4)/Product_File_Text/Reference_List/Source_Product_Internal[*]/comment** **5)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product[*]/Internal_Reference/comment** **6)/Product_Observational/Reference_List/Source_Product_Internal[*]/comment** **7)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product/Internal_Reference/comment** **8)/Product_Observational/Identification_Area/Alias_List/Alias/comment** **9)/Product_Observational/Observation_Area/comment** **10)/Product_Observational/Observation_Area/Investigation_Area/Internal_Reference/comment** **11)/Product_Observational/Observation_Area/Observing_System/Observing_System_Component[*]/Internal_Reference/comment** **12)/Product_Observational/Observation_Area/Target_Identification/Internal_Reference/comment** **13)/Product_Observational/Reference_List/Internal_Reference/comment** **14)/Product_Observational/Reference_List/Source_Product_Internal/comment** **15)/Product_Browse/Reference_List/Internal_Reference/comment**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
			ASCII_Text_Preserved
img:**Companding**	The Companding class describes whether or not data is or has had its bit depth reduced (for example conversion from 12 to 8 bits via a lookup table or bit scaling), the venue where it occurred (Software or Hardware), and the method used to complete the companding. The processing_algorithm attribute specifies how data was companded. Generally this will either be via a lookup table (such as a square root encoding), or by shifting bits to preserve the high order bits and discard the low order bits. The value of this keyword is mission specific but there are recommended values that should apply across missions when possible: NONE - no scaling. LUTn - use the numbered lookup table. Lookup tables are defined in the mission SIS. It is preferred for "n" to be a number but it could be a name, for example LUT_MMM_3 to indicate LUT 3 for the MMM instruments (on MSL). MSB_BITn - Shift to make bit "n" the most significant. Bits start numbering at 0 so MSB_BIT7 means no shift for a 12->8 bit companding, while MSB_BIT11 means to shift right 4 bits for a 12->8 bit companding. AUTOSHIFT - Data should be shifted to preserve the highest value. This value should only appear in a command echo; one of the MSB_BITn values should be used in downlinked data to specify what the actual shift was.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Sampling/Companding**	
		1) *img:companding_state* 2) *img:active_flag* 3) *img:processing_venue* 4) *img:processing_algorithm* 5) *img:sequence_number* 6) *img:Data_Processing* 7) *img:Companding_File*	
img:**companding_state**	The companding_state attribute specifies whether the data is or has had its bit depth reduced, for example conversion from 12 to 8 bits via a lookup table or bit scaling. Valid values: None - values have not been companded. Companded - values are currently companded. Expanded - values have been companded but are now expanded back to original size.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Sampling/Companding/companding_state**	
		1) None 2) Companded 3) Expanded	ASCII_Short_String_Collapsed
Context_Area	The Context Area provides context information for a product.	**1)/Product_Collection/Context_Area** **2)/Product_Document/Context_Area**	
		1) *comment* 2) *Time_Coordinates* 3) *Primary_Result_Summary* 4) *Investigation_Area* 5) *Observing_System* 6) *Target_Identification* 7) *Mission_Area* 8) *Discipline_Area*	
geom:**Coordinate_Space_Definition**	The Coordinate_Space classes are typically used for lander/rover geometry while the Coordinate_System construction is used for orbiter/flyby geometry. **InSight Specific:** *This class defines the coordinate system in terms of another, reference, coordinate system, providing the offset and rotation between the two.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]**	
		1) *local_identifier* 2) *geom:positive_azimuth_direction* 3) *geom:positive_elevation_direction* 4) *geom:Coordinate_Space_Present* 5) *geom:Vector_Origin_Offset* 6) *geom:Quaternion_Plus_Direction* 7) *geom:Coordinate_Space_Reference*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**Coordinate_Space_Indexed**	The Coordinate_Space_Indexed class contains the attributes and classes identifying the indexed coordinate space.	**1)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed** **4)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed** **5)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/Coordinate_Space_Reference/Coordinate_Space_Indexed** **6)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[1]/Coordinate_Space_Reference/Coordinate_Space_Indexed** **7)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Present/Coordinate_Space_Indexed** **8)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/Coordinate_Space_Reference/Coordinate_Space_Indexed**	
		1) *geom:coordinate_space_frame_type* 2) *geom:solution_id* 3) *geom:Coordinate_Space_Index*	
geom:**Coordinate_Space_Present**	The Coordinate_Space_Present class includes the attributes that identifies the coordinate space presently being defined.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Present**	
		1) *geom:Coordinate_Space_Identification* 2) *geom:Coordinate_Space_Indexed*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
geom:**Coordinate_Space_Reference**	The Coordinate_Space_Reference class includes the attributes that identify the coordinate space being used to express coordinates in the class in which it appears. **InSight Specific:** *The occurrence in Derived_Product_Parameters specifies the coordinate space used to express pixel values in the file itself (e.g. XYZ values).*	**1)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference** **4)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/Coordinate_Space_Reference** **5)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference** **6)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Reference** **7)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/Coordinate_Space_Reference**	
		1) *geom:Coordinate_Space_Identification* 2) *geom:Coordinate_Space_Indexed* 3) *Local_Internal_Reference*	
copyright	The copyright attribute is a character string giving information about the exclusive right to make copies, license, and otherwise exploit an object, whether physical or digital.	**1)/Product_Document/Document/copyright**	
			ASCII_Text_Preserved
cart:**Cylindrical**	This is an in-situ projection used for (non-stereo) panoramas. Each image row represents a constant elevation and each image column represents a constant azimuth, from a given point of view. The image scale in degrees per pixel is constant across the image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical**	
		1) *cart:pixel_scale_x* 2) *cart:pixel_scale_y* 3) *cart:maximum_elevation* 4) *cart:minimum_elevation* 5) *cart:start_azimuth* 6) *cart:stop_azimuth* 7) *cart:zero_elevation_line* 8) *cart:Vector_Projection_Origin*	
cart:**Cylindrical_Perspective**	This is an in-situ projection that is a hybrid. Each column is a vertical slice from a pinhole camera (Perspective	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical_Perspective**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
	projection), while the columns are spaced evenly in azimuth (Cylindrical projection). It is most useful for viewing panoramas in stereo.	1) *cart:pixel_scale_x* 2) *cart:pixel_scale_y* 3) *cart:maximum_elevation* 4) *cart:minimum_elevation* 5) *cart:projection_azimuth* 6) *cart:projection_elevation* 7) *cart:projection_elevation_line* 8) *cart:start_azimuth* 9) *cart:stop_azimuth* 10) *cart:projection_axis_offset* 11) *cart:Vector_Projection_Origin* 12) *cart:Vector_Projection_Z_Axis*	
geom:**Derived_Geometry**	The Derived_Geometry class is a container for surface based observations (lander or rover). It is used to provide some geometric quantities relative to a specific Reference Coordinate Space. **InSight Specific:** *On InSight, a Derived_Geometry class exists for both Site and Lander frame.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]**	
		1) *geom:emission_angle* 2) *geom:Coordinate_Space_Reference* 3) *instrument_azimuth* 4) *instrument_elevation* 5) *solar_azimuth* 6) *solar_elevation* 7) *start_azimuth* 8) *stop_azimuth*	
img_surface:**Derived_Product_Parameters**	The Derived_Product_Parameters class contains attributes used to identify and describe processing performed on products in order to produce a higher level product.		
		1) *img_surface:derived_image_type_name* 2) *img_surface:horizon_mask_elevation* 3) *img_surface:Placement_Target_Instrument* 4) *img_surface:Vector_Range_Origin* 5) *img_surface:Pointing_Correction* 6) *geom:Coordinate_Space_Reference*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
description	The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.	**1)/Product_Collection/Identification_Area/Citation_Information/description** **2)/Product_Collection/Identification_Area/Modification_History/Modification_Detail/description** **3)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]/description** **4)/Product_Observational/File_Area_Observational/Table_Delimited[*]/description** **5)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited/Field_Delimited[*]/description** **6)/Product_XML_Schema/Identification_Area/Modification_History/Modification_Detail/description** **7)/Product_XML_Schema/File_Area_XML_Schema[*]/XML_Schema/description** **8)/Product_Document/Identification_Area/Modification_History/Modification_Detail/description** **9)/Product_Document/Document/description** **10)/Product_File_Text/Identification_Area/Citation_Information/description** **11)/Product_Document/Identification_Area/Citation_Information/description** **12)/Product_Observational/File_Area_Observational/Header/description**	
			UTF8_Text_Preserved
img:**Detector**	The Detectorclass contains attributes describing the state of the instrument detector. These are values directly read from the detector and do not necessarily reflect the state of the image after onboard processing. For example, the entire image may be read into memory and then subframed in software, in which case the subframe attributes in this class reflect the entire image (as read from the detector), whereas those in the Subframe class represent the final subframe results.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Detector** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Detector**	
		1) *img:first_line* 2) *img:first_sample* 3) *img:lines* 4) *img:samples* 5) *img:detector_to_image_rotation* 6) *img:erase_count* 7) *img:readout_rate* 8) *img:gain_mode_id* 9) *img:gain_number* 10) *img:analog_offset*	
geom:**Device_Angle**	The Device_Angle class is a container for the set of angles between the various components or devices of the spacecraft.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[1]/Device_Angle**	
		1) *local_identifier* 2) *geom:Device_Angle_Index*	
geom:**Device_Angle_Index**		**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/Device_Angle/Device_Angle_Index[*]**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Device_Angle class is a container for the set of angles the spacecraft device specified in the parent Articulation_Device_Parameters class.	1) *geom:index_value_angle* 2) *geom:index_id* 3) *geom:List_Index_Angle*	
geom:**Device_Temperature**	The Device_Temperature class is a container for all available device temperatures of an articulated device and/or part(s) of a device.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/Device_Temperature**	
		1) *local_identifier* 2) *geom:Device_Temperature_Index*	
img:**Device_Temperature**	The Device_Temperature class provides a container for the temperature of some point on an imaging instrument or other imaging device. **InSight Specific:** *For InSight the arm temperatures are 'AZIMUTH JOINT', 'ELEVATION JOINT', 'ELBOW JOINT', and 'WRIST JOINT'. The grapple temperature is 'GRAPPLE'.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Instrument_State/Device_Temperatures/Device_Temperature[*]**	
		1) *img:raw_count* 2) *img:temperature_value* 3) *img:device_id* 4) *img:temperature_status* 5) *img:Device_Parameters*	
geom:**Device_Temperature_Index**	The Device_Temperature_Index class specifies the attributes describing the temperature of one device or some part of a device. **InSight Specific:** *For InSight the arm temperatures are 'AZIMUTH JOINT', 'ELEVATION JOINT', 'ELBOW JOINT', and 'WRIST JOINT'. The grapple temperature is 'GRAPPLE'.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/Device_Temperature/Device_Temperature_Index**	
		1) *geom:index_value_temperature* 2) *geom:index_value_number* 3) *geom:index_id* 4) *geom:List_Index_Temperature*	
img:**Device_Temperatures**	The Device_Temperatures class provides a container for the set of temperatures of an imaging instrument or other imaging device.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Instrument_State/Device_Temperatures**	
		1) *img:Device_Temperature*	
Discipline_Area	The Discipline area allows the insertion of discipline specific metadata.	**1)/Product_Observational/Observation_Area/Discipline_Area**	
		1) *Display_Settings* 2) *Geometry* 3) *Imaging* 4) *Surface_Imaging* 5) *Mission_Information* 6) *Surface_Mission_Information* 7) *Processing_Information* 8) *Cartography*	
disp:**Display_Direction**	The Display_Direction class specifies how two of the dimensions of an Array object should be displayed in the vertical (line) and horizontal (sample) dimensions of a display device.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Display_Direction**	
		1) *comment* 2) *disp:horizontal_display_axis* 3) *disp:horizontal_display_direction* 4) *disp:vertical_display_axis* 5) *disp:vertical_display_direction*	
disp:**Display_Settings**	The Display_Settings class contains one or more classes describing how data should be displayed on a display device.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings**	
		1) *Local_Internal_Reference* 2) *disp:Display_Direction* 3) *disp:Color_Display_Settings* 4) *disp:Movie_Display_Settings*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
Document	The Document class describes a document.	**1)/Product_Document/Document**	
		1) *revision_id* 2) *document_name* 3) *doi* 4) *author_list* 5) *editor_list* 6) *acknowledgement_text* 7) *copyright* 8) *publication_date* 9) *document_editions* 10) *description* 11) *Document_Edition* 12) *Digital_Object*	
Document_Edition	A Document Edition is one complete version of the document in a set of files that is distinguished by language, a unique assemblage of file formats, or some other criteria.	**1)/Product_Document/Document/Document_Edition**	
		1) *edition_name* 2) *starting_point_identifier* 3) *language* 4) *files* 5) *description* 6) *Document_File*	
Document_File	The Document File class describes a file which is a part of a document.	**1)/Product_Document/Document/Document_Edition/Document_File**	
		1) *directory_path_name* 2) *file_name* 3) *document_standard_id* 4) *local_identifier* 5) *creation_date_time* 6) *file_size* 7) *records* 8) *md5_checksum* 9) *comment* 10) *File* 11) *Digital_Object*	
document_standard_id		**1)/Product_Document/Document/Document_Edition/Document_File/document_standard_id**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The document_standard_id attribute provides the formal name of a standard used for the structure of a document file.	1) 7-Bit ASCII Text 2) Encapsulated Postscript 3) GIF 4) HTML 5) HTML 2.0 6) HTML 3.2 7) HTML 4.0 8) HTML 4.01 9) JPEG 10) LaTEX 11) MPEG-4 12) Microsoft Excel 13) Microsoft Word 14) PDF 15) PDF/A 16) PNG 17) Postscript 18) Rich Text 19) TIFF 20) UTF-8 Text	ASCII_Short_String_Collapsed
domain	The radial "zone" or "shell" of the target for which the observations were collected or which are represented in the product(s). The value may depend on wavelength_range and size of the target. **InSight Specific:** *For InSight camera data, only Surface is used.*	**1)/Product_Collection/Context_Area/Primary_Result_Summary/Science_Facets/domain** **2)/Product_Observational/Observation_Area/Primary_Result_Summary/Science_Facets/domain**	
		1) Atmosphere 2) Dynamics 3) Heliosheath 4) Heliosphere 5) Interior 6) Interstellar 7) Ionosphere 8) Magnetosphere 9) Rings 10) Surface	ASCII_Short_String_Collapsed
img:**Downsampling**	The Downsampling class describes whether or not downsampling occurred, the venue where it occurrected (Software or Hardware), the method used to downsample, and the pixel averaging dimensions. A downsampled image is a smaller version of the image, resulting in reduced resolution of the same coverage area. The processing_algorithm attribute specifies the pixel resolution downsample method used. This varies by mission, but examples from MSL include: 'Mean' - Downsampling done in software by calculation of the mean., 'Conditional' - Use hardware binning if downsampling (by mean calculation) and subframe arguments are consistent.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Downsampling**	
		1) *img:active_flag* 2) *img:processing_venue* 3) *img:processing_algorithm* 4) *img:sequence_number* 5) *img:Data_Processing* 6) *img:Pixel_Averaging_Dimensions*	
edition_name	The edition name attribute provides a name by which the edition is known.	**1)/Product_Document/Document/Document_Edition/edition_name**	
			UTF8_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
Element_Array	The Element Array class is used as a component of the array class and defines an element of the array.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Element_Array** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Element_Array**	
		1) *data_type* 2) *unit* 3) *scaling_factor* 4) *value_offset*	
Encoded_Image	The Encoded Image class is used for ancillary images in standard formats, such as JPEG.	**1)/Product_Observational/File_Area_Observational_Supplemental[*]/Encoded_Image** **2)/Product_Observational/File_Area_Observational_Supplemental/Encoded_Image** **3)/Product_Browse/File_Area_Browse/Encoded_Image**	
		1) *name* 2) *offset* 3) *encoding_standard_id* 4) *local_identifier* 5) *object_length* 6) *md5_checksum* 7) *description* 8) *Encoded_Byte_Stream* 9) *Digital_Object*	
encoding_standard_id	The encoding_standard_id attribute provides the formal name of a standard used for the structure of an Encoded Byte Stream digital object.	**1)/Product_Observational/File_Area_Observational_Supplemental[*]/Encoded_Image/encoding_standard_id** **2)/Product_Observational/File_Area_Observational_Supplemental/Encoded_Image/encoding_standard_id** **3)/Product_Browse/File_Area_Browse/Encoded_Image/encoding_standard_id**	
		1) GIF 2) J2C 3) JPEG 4) PDF 5) PDF/A 6) PNG 7) TIFF	ASCII_Short_String_Collapsed
img_surface:**Error_Model_Parameter**	The Error_Model_Parameter class specifies name and value for a parameter defined by the error model described by the parent class. **InSight Specific:** *For MIPL_CONST_DISPARITY_PROJECTED_V1, DELTA_REF_LINE and DELTA_REF_SAMP define how much the reference image was perturbed while DELTA_DISP_LINE and DELTA_DISP_SAMPLE define how much the disparity was perturbed.*		
		1) *name* 2) *value*	
img:**Exposure**	The Exposure class contains attributes identifying the image instrument exposure configuration and image exposure values. As a child of the	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Exposure** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	Image_Product_Information class, these attribute values identify the actual exposure values when the image was taken. As a child of the Commanded_Parameters class, these attribute values are those that were commanded to the spacecraft at the time the image was taken.	1) *img:exposure_count* 2) *img:exposure_duration* 3) *img:exposure_duration_count* 4) *img:exposure_type* 5) *img:Autoexposure*	
Field_Delimited	The Field_Delimited class defines a field of a delimited record or a field of a delimited group.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited/Field_Delimited[*]**	
		1) *name* 2) *field_number* 3) *data_type* 4) *maximum_field_length* 5) *field_format* 6) *unit* 7) *scaling_factor* 8) *value_offset* 9) *description* 10) *Special_Constants* 11) *Field_Statistics*	
field_delimiter	The field_delimiter attribute provides the character that marks the boundary between two fields in a delimited table.	**1)/Product_Collection/File_Area_Inventory/Inventory/field_delimiter** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/field_delimiter**	
		1) Comma 2) Horizontal Tab 3) Semicolon 4) Vertical Bar 5) comma 6) horizontal tab 7) semicolon 8) vertical bar	ASCII_Short_String_Collapsed
field_number	The field_number attribute provides the position of a field, within a series of fields, counting from 1. If two fields within a record are physically separated by one or more groups, they have consecutive field numbers; the fields within the intervening group(s) are numbered separately. Fields within a group separated by one or more (sub)groups, will also have consecutive field numbers.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]/field_number** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited/Field_Delimited[*]/field_number**	
			ASCII_NonNegative_Integer
fields	The fields attribute provides a count of the total number of scalar fields directly associated with a table record. Fields within groups within the record are not included in this count.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/fields** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited/fields**	
			ASCII_NonNegative_Integer

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
File	The File class consists of attributes that describe a file in a data store.	**1)/Product_Collection/File_Area_Inventory/File** **2)/Product_Observational/File_Area_Observational_Supplemental[*]/File** **3)/Product_XML_Schema/File_Area_XML_Schema[*]/File** **4)/Product_File_Text/File_Area_Text/File** **5)/Product_Observational/File_Area_Observational/File** **6)/Product_Observational/File_Area_Observational_Supplemental/File** **7)/Product_Browse/File_Area_Browse/File**	
		1) *file_name* 2) *local_identifier* 3) *creation_date_time* 4) *file_size* 5) *records* 6) *md5_checksum* 7) *comment* 8) *Digital_Object*	
File_Area_Browse	The File Area Browse class describes a file and one or more tagged_data_objects contained within the file.	**1)/Product_Browse/File_Area_Browse**	
		1) *File_Area* 2) *File* 3) *Array* 4) *Encoded_Image*	
File_Area_Inventory	The File Area Inventory class describes a file and an inventory consisting of references to members.	**1)/Product_Collection/File_Area_Inventory**	
		1) *File_Area* 2) *File* 3) *Inventory*	
File_Area_Observational	The File Area Observational class describes, for an observational product, a file and one or more tagged_data_objects contained within the file.	**1)/Product_Observational/File_Area_Observational**	
		1) *File_Area* 2) *File* 3) *Composite_Structure* 4) *Array* 5) *Header* 6) *Array_3D_Image* 7) *Array_2D_Image* 8) *Table_Delimited*	
File_Area_Observational_Supplemental	The File Area Observational Supplemental class describes, for an observational product, additional files and tagged_data_objects contained within the file.	**1)/Product_Observational/File_Area_Observational_Supplemental[*]** **2)/Product_Observational/File_Area_Observational_Supplemental**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
		1) *File_Area* 2) *File* 3) *Composite_Structure* 4) *Array* 5) *Encoded_Image* 6) *Stream_Text*	
File_Area_Text	The File Area Text class describes a file that contains a text stream object.	**1)/Product_File_Text/File_Area_Text**	
		1) *File_Area* 2) *File* 3) *Stream_Text*	
File_Area_XML_Schema	The File Area XML Schema class describes a file that contains a resource used for the PDS4 implementation into XML.	**1)/Product_XML_Schema/File_Area_XML_Schema[*]**	
		1) *File_Area* 2) *File* 3) *XML_Schema*	
file_size	The file_size attribute provides the size of the file.	**1)/Product_Collection/File_Area_Inventory/File/file_size** **2)/Product_XML_Schema/File_Area_XML_Schema[*]/File/file_size**	
			ASCII_NonNegative_Integer *Units_of_Storage*
files	The files attribute provides the number of files in the edition.	**1)/Product_Document/Document/Document_Edition/files**	
			ASCII_NonNegative_Integer
img:**Flat_Field_Correction**	The Flat_Field_Correction class specifies how flat-field correction was performed on this image. This can be done either algorithmically, using a Radial_Flat_Field_Correction, or using a Flat_Field_File.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Flat_Field_Correction**	
		1) *img:active_flag* 2) *img:processing_venue* 3) *img:processing_algorithm* 4) *img:sequence_number* 5) *img:Data_Processing* 6) *img:Radial_Flat_Field_Function* 7) *img:Flat_Field_File*	
img:**Flat_Field_File**	The Flat_Field_File class specifies the image used for flat field correction. The image is divided by this flat field image in order to apply the flat field correction (which is the opposite of Radial_Flat_Field_Function).	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Flat_Field_Correction/Flat_Field_File**	
		1) *description* 2) *name* 3) *img:Data_Processing_File* 4) *External_Reference* 5) *Internal_Reference*	
img:**Frame**	The Frame class contains attributes providing information specific to an image frame. A frame consists of a sequence of measurements made over a specified time interval, and may include measurements from different instrument modes.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Frame**	
		1) *img:frame_id* 2) *img:frame_type_name*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**Geometry**	The Geometry class is a container for all geometric information in the label. The Image_Display_Geometry class should have one instance if the primary data object is an Array object for which two of the dimensions are suitable for display in the vertical (line) and horizontal (sample) dimensions of a display device. Multiple instances of the Image_Display_Geometry class are only appropriate if the data product contains multiple Array objects and the orientations of the various objects are not the same.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry**	
		1) *geom:SPICE_Kernel_Files* 2) *geom:Expanded_Geometry* 3) *geom:Image_Display_Geometry* 4) *geom:Geometry_Orbiter* 5) *geom:Geometry_Lander*	
geom:**Geometry_Lander**	The Geometry_Lander class is a container for all geometric information in the label relating to a landed spacecraft, including rovers.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander**	
		1) *geom:Articulation_Device_Parameters* 2) *geom:Camera_Model_Parameters* 3) *geom:Coordinate_Space_Definition* 4) *geom:Derived_Geometry* 5) *geom:Motion_Counter*	
img_surface:**Geometry_Projection**	The Geometry_Projection describes the geometric projection or warping the image has undergone. It is not the intent of this class to describe map projections, but rather image warps such as linearization (stereo epipolar alignment), geometric sensor correction, or rubber-sheeting. If present, a linearization partner image can be referenced using either an Internal_Reference or External_Reference.		
		1) *img_surface:linearization_mode* 2) *img_surface:linearization_mode_fov* 3) *img_surface:geometry_projection_type* 4) *External_Reference*	
disp:**green_channel_band**	The green_channel_band attribute identifies the number of the band, along the band axis, that should be loaded, by default, into the green channel of a display device. The first band along the band axis has band number 1.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Color_Display_Settings/green_channel_band**	
			ASCII_Integer
groups	The groups attribute provides a count of the total number of groups directly associated with a table record. Groups within groups within the record are not included in this count.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/groups** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited/groups**	
			ASCII_NonNegative_Integer
Header	The Header class describes a data object header. **InSight Specific:** *For InSight this identifies the attached VICAR label for images and specifies its length.*	**1)/Product_Observational/File_Area_Observational/Header**	
		1) *name* 2) *object_length* 3) *offset* 4) *local_identifier* 5) *parsing_standard_id* 6) *md5_checksum* 7) *description* 8) *Parsable_Byte_Stream* 9) *Digital_Object*	
cart:**Horizontal_Coordinate_System_Definition**	The Horizontal_Coordinate_System_Definition class provides the reference frame or system from which linear or angular quantities are measured and assigned to the position that a point occupies.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition**	
		1) *cart:Geographic* 2) *cart:Geodetic_Model* 3) *Local*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
disp:**horizontal_display_axis**	The horizontal_display_axis attribute identifies, by name, the axis of an Array (or Array subclass) that is intended to be displayed in the horizontal or "sample" dimension on a display device. The value of this attribute must match the value of one, and only one, axis_name attribute in an Axis_Array class of the associated Array.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Display_Direction/horizontal_display_axis**	
			ASCII_Short_String_Collapsed
disp:**horizontal_display_direction**	The horizontal_display_direction attribute specifies the direction across the screen of a display device that data along the horizontal axis of an Array is supposed to be displayed. **InSight Specific:** *InSight data is always Left to Right.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Display_Direction/horizontal_display_direction**	
		1) Left to Right 2) Right to Left	ASCII_Short_String_Collapsed
Identification_Area	The identification area consists of attributes that identify and name an object.	**1)/Product_Collection/Identification_Area** **2)/Product_XML_Schema/Identification_Area** **3)/Product_File_Text/Identification_Area** **4)/Product_Document/Identification_Area** **5)/Product_Observational/Identification_Area** **6)/Product_Browse/Identification_Area**	
		1) *logical_identifier* 2) *version_id* 3) *title* 4) *information_model_version* 5) *product_class* 6) *Alias_List* 7) *Citation_Information* 8) *Modification_History*	
img_surface:**Image_Identifiers**	The Image_Identifiers class contains items that help to identify the image or guide how processing should be done to the image.		
		1) *img_surface:image_id* 2) *img_surface:mosaic_id* 3) *img_surface:mesh_id* 4) *img_surface:stereo_match_id*	
img:**Imaging**		**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Imaging class contains classes and attributes describing both the image product itself and the imaging instrument. Image product information can include exposure duration, filters, data correction, sampling, frame, sub-frames, and how the product was derived. For the imaging instrument, information can be provided describing the dynamic physical or operating characteristics of the imaging instrument.	1) *Local_Internal_Reference* 2) *img:Color_Filter_Array* 3) *img:Color_Processing* 4) *img:Detector* 5) *img:Downsampling* 6) *img:Exposure* 7) *img:Flat_Field_Correction* 8) *img:Focus* 9) *img:Focus_Stack* 10) *img:Frame* 11) *img:Onboard_Compression* 12) *img:Optical_Filter* 13) *img:Radiometric_Correction* 14) *img:Sampling* 15) *img:Shutter_Subtraction* 16) *img:Subframe* 17) *img:Video* 18) *img:Instrument_State* 19) *img:Commanded_Parameters*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**index_id**	The index_id attribute supplies a short name (identifier) for the associated value in a group of related values.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_id **2)**/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_id **3)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_id **4)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_id **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_id **6)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_id **7)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_id **8)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_id **9)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_id **10)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/Device_Angle/Device_Angle_Index[*]/index_id **11)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*]/Device_Temperature/Device_Temperature_Index/index_id **12)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[1]/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_id **13)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Coordinate_Space_Present/Coordinate_Space_Indexed/Coordinate_Space_Index[*]/index_id **14)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[*]/Coordinate_Space_Reference/Coordinate_Space_Indexed/Coordinate_Space_Index/index_id **15)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Motion_Counter/Motion_Counter_Index[*]/index_id	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
			ASCII_Short_String_Collapsed
information_model_version	The information_model_version attribute provides the version identification of the PDS Information Model on which the label and schema are based.	**1)/Product_Collection/Identification_Area/information_model_version** **2)/Product_XML_Schema/Identification_Area/information_model_version** **3)/Product_File_Text/Identification_Area/information_model_version** **4)/Product_Document/Identification_Area/information_model_version** **5)/Product_Observational/Identification_Area/information_model_version** **6)/Product_Browse/Identification_Area/information_model_version**	
		1) 1.0.0.0 2) 1.1.0.0 3) 1.10.0.0 4) 1.10.1.0 5) 1.11.0.0 6) 1.12.0.0 7) 1.2.0.0 8) 1.2.0.1 9) 1.3.0.0 10) 1.3.0.1 11) 1.4.0.0 12) 1.5.0.0 13) 1.6.0.0 14) 1.7.0.0 15) 1.8.0.0 16) 1.9.0.0 17) 1.9.1.0	ASCII_Short_String_Collapsed
proc:**Input_Product_List**	The Input_Product_List class describes all of the product(s) most directly used as input to software for product creation, including raw, partially-processed, calibrated, or derived products. These Input Products can be explicitly described in this label using the Input_Product class, and/or a list of products can be specified in another product referenced by the Internal_Reference or Local_Internal_Reference.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List**	
		1) *proc:Input_Product*	
img_surface:**Instrument_Information**	The Instrument_Information class specifies information about the configuration of the instrument as it acquired this observation.		
		1) *img_surface:image_type* 2) *img_surface:image_acquire_mode* 3) *img_surface:instrument_type* 4) *img_surface:instrument_mode_id* 5) *img_surface:instrument_serial_number* 6) *img_surface:instrument_version_number* 7) *img_surface:ops_instrument_key* 8) *img_surface:camera_product_id* 9) *img_surface:camera_product_id_count*	
img:**Instrument_State**		**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Instrument_State**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Instrument_State class contains classes providing the values of any dynamic physical or operating characteristics of the imaging instruments.	1) *img:Device_Component_States* 2) *img:Device_Currents* 3) *img:Device_Motor_Counts* 4) *img:Device_Temperatures* 5) *img:Device_Voltages*	
Internal_Reference	The Internal_Reference class is used to cross-reference other products in PDS4-compliant registries of PDS and its recognized international partners.	**1)/Product_Collection/Context_Area/Investigation_Area/Internal_Reference** **2)/Product_Collection/Context_Area/Observing_System/Observing_System_Component[*]/Internal_Reference** **3)/Product_Collection/Context_Area/Target_Identification/Internal_Reference** **4)/Product_Collection/Reference_List/Internal_Reference[*]** **5)/Product_Document/Reference_List/Internal_Reference[*]** **6)/Product_Document/Context_Area/Investigation_Area/Internal_Reference** **7)/Product_Document/Context_Area/Observing_System/Observing_System_Component/Internal_Reference** **8)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Geometry_Projection/Internal_Reference** **9)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Stereo_Product_Parameters/Internal_Reference** **10)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product[*]/Internal_Reference** **11)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Placement_Target_Instrument/Internal_Reference** **12)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Flat_Field_Correction/Flat_Field_File/Internal_Reference** **13)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product/Internal_Reference** **14)/Product_Observational/Observation_Area/Investigation_Area/Internal_Reference** **15)/Product_Observational/Observation_Area/Observing_System/Observing_System_Component[*]/Internal_Reference** **16)/Product_Observational/Observation_Area/Target_Identification/Internal_Reference** **17)/Product_Observational/Reference_List/Internal_Reference** **18)/Product_Browse/Reference_List/Internal_Reference**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
		1) *lid_reference* 2) *reference_type* 3) *comment* 4) *lidvid_reference*	
Inventory	The Inventory class defines the inventory for members of a collection.	**1)/Product_Collection/File_Area_Inventory/Inventory**	
		1) *name* 2) *reference_type* 3) *offset* 4) *records* 5) *local_identifier* 6) *object_length* 7) *record_delimiter* 8) *md5_checksum* 9) *parsing_standard_id* 10) *description* 11) *field_delimiter* 12) *Table_Delimited* 13) *Digital_Object* 14) *Uniformly_Sampled* 15) *Record_Delimited*	
Investigation_Area	The Investigation_Area class provides information about an investigation (mission, observing campaign or other coordinated, large-scale data collection effort).	**1)/Product_Collection/Context_Area/Investigation_Area** **2)/Product_Document/Context_Area/Investigation_Area** **3)/Product_Observational/Observation_Area/Investigation_Area**	
		1) *name* 2) *type* 3) *Internal_Reference*	
img:**JPEG_Parameters**	The JPEG_Parameters class contains attributes describing onboard compression parameters specific to Joint Photographic Experts Group (JPEG) image compression.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression/JPEG_Parameters**	
		1) *img:color_subsampling_mode* 2) *img:jpeg_quality* 3) *img:jpeg_parameter*	
keyword	The keyword attribute provides one or more words to be used for keyword search.	**1)/Product_Collection/Identification_Area/Citation_Information/keyword[*]**	
			UTF8_Short_String_Collapsed
language	The language attribute provides the language used for definition and designation of the term.	**1)/Product_Document/Document/Document_Edition/language**	
		1) English	ASCII_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
cart:**line**	The line attribute specifies the line number in the image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/Pixel_Position_Origin/line** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/Pixel_Position_Origin/line** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective/Camera_Model_Offset/line**	
			ASCII_Real
img_surface:**linearization_mode**	The linearization_mode attribute specifies what kind of stereo partner was used to linearize the image (the process requires two camera models).		
		1) Nominal 2) Actual 3) None	ASCII_Short_String_Collapsed
cart:**Local**	The Local class provides a description of any coordinate system that is not aligned with the surface of the planet.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local**	
		1) *cart:local_description* 2) *cart:local_georeference_information* 3) *Map_Projection_Lander* 4) *Surface_Model_Parameters*	
cart:**local_description**	The local_description attribute provides a description of the coordinate system and its orientation to the surface of a planet.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/local_description**	
			ASCII_Text_Preserved
local_identifier	The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.	**1)/Product_Collection/File_Area_Inventory/File/local_identifier** **2)/Product_Collection/File_Area_Inventory/Inventory/local_identifier** **3)/Product_Observational/File_Area_Observational/Array_2D_Image/local_identifier** **4)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/local_identifier[*]** **5)/Product_Observational/File_Area_Observational/Header/local_identifier** **6)/Product_Observational/File_Area_Observational/Array_3D_Image/local_identifier** **7)/Product_Browse/File_Area_Browse/File/local_identifier** **8)/Product_Browse/File_Area_Browse/Encoded_Image/local_identifier**	
			ASCII_Local_Identifier

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
Local_Internal_Reference	The Local Internal_Reference class is used to cross-reference other Description Objects in a PDS4 label.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Local_Internal_Reference **2)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Local_Internal_Reference **3)**/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Local_Internal_Reference **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Local_Internal_Reference **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[2]/Coordinate_Space_Reference/Local_Internal_Reference **6)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[1]/Coordinate_Space_Reference/Local_Internal_Reference **7)**/Product_Observational/Observation_Area/Discipline_Area/Imaging/Local_Internal_Reference **8)**/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Local_Internal_Reference	
		1) *comment* 2) *local_identifier_reference* 3) *local_reference_type*	
local_reference_type	The local_reference_type attribute provides the name of an association between an entity identified by a local_identifier_reference and another corresponding entity identified by a local_identifier. The values for the local_reference_type are expected to be enumerated for appropriate contexts in the Schematron files of local (i.e., discipline and mission) data dictionaries. **InSight Specific:** *Values used for InSight include cartography_parameters_to_image_object, imaging_parameters_to_image_object, processing_information_to_data_object, to_reference_coordinate_space, display_settings_to_array.*	**1)**/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Coordinate_Space_Reference/Local_Internal_Reference/local_reference_type **2)**/Product_Observational/Observation_Area/Discipline_Area/Cartography/Local_Internal_Reference/local_reference_type **3)**/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Local_Internal_Reference/local_reference_type **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Coordinate_Space_Reference/Local_Internal_Reference/local_reference_type **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[2]/Coordinate_Space_Reference/Local_Internal_Reference/local_reference_type **6)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[1]/Coordinate_Space_Reference/Local_Internal_Reference/local_reference_type **7)**/Product_Observational/Observation_Area/Discipline_Area/Imaging/Local_Internal_Reference/local_reference_type **8)**/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Local_Internal_Reference/local_reference_type	
			ASCII_Short_String_Collapsed
local_true_solar_time		**1)**/Product_Observational/Observation_Area/Time_Coordinates/local_true_solar_time	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The local_true_solar_time (LTST) attribute provides the local time on a rotating solar system body where LTST is 12 h at the sub-solar point (SSP) and increases 1 h for each 15 degree increase in east longitude away from the SSP for prograde rotation.		ASCII_Short_String_Collapsed
cart:**Map_Projection_Lander**	The Map_Projection class provides the systematic representation of all or part of the surface of a planet on a plane or developable surface from the perspective of an in-situ spacecraft.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander**	
		1) *cart:lander_map_projection_name* 2) *cart:Cylindrical* 3) *geom:Coordinate_Space_Reference* 4) *Cylindrical_Perspective* 5) *Orthorectified* 6) *Vertical*	
maximum_field_length	The maximum_field_length attribute sets an upper, inclusive bound on the number of bytes in the field.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]/maximum_field_length**	
			ASCII_NonNegative_Integer *Units_of_Storage*
maximum_record_length	The maximum_record_length attribute provides the maximum length of a record, including the record delimiter.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/maximum_record_length**	
			ASCII_NonNegative_Integer *Units_of_Storage*
md5_checksum	The md5_checksum attribute is the 32-character hexadecimal number computed using the MD5 algorithm for the contiguous bytes of single digital object (as stored) or for an entire file.	**1)/Product_Collection/File_Area_Inventory/File/md5_checksum**	
			ASCII_MD5_Checksum
Mission_Area	The mission area allows the insertion of mission specific metadata.	**1)/Product_Observational/Observation_Area/Mission_Area**	
msn:**Mission_Information**	The Mission Information class provides a set of optional attributes that have their value sets defined by the mission.		
		1) *msn:mission_phase_name* 2) *msn:mission_phase_identifier* 3) *msn:start_orbit_number* 4) *msn:stop_orbit_number* 5) *msn:spacecraft_clock_start_count* 6) *msn:spacecraft_clock_stop_count*	
modification_date	The modification_date attribute provides date the modifications were completed	**1)/Product_Collection/Identification_Area/Modification_History/Modification_Detail/modification_date** **2)/Product_XML_Schema/Identification_Area/Modification_History/Modification_Detail/modification_date** **3)/Product_Document/Identification_Area/Modification_History/Modification_Detail/modification_date**	
			ASCII_Date_YMD

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
Modification_Detail	The Modification_Detail class provides the details of one round of modification for the product. The first, required, instance of this class documents the date the product was first registered. **InSight Specific:** *For InSight, information about the first registration of the product is not available at the time the label is created, and it is not feasible to update the label later. Therefore, the single (required) instance of Modification_Detail instead specifies the version number of the current version, and the date the label was created (not the date it was added to the PDS registry, which is similarly unavailable).*	**1)/Product_Collection/Identification_Area/Modification_History/Modification_Detail** **2)/Product_XML_Schema/Identification_Area/Modification_History/Modification_Detail** **3)/Product_Document/Identification_Area/Modification_History/Modification_Detail**	
		1) *modification_date* 2) *version_id* 3) *description*	
Modification_History	The Modification_History class tracks the history of changes made to the product once it enters the registry system.	**1)/Product_Collection/Identification_Area/Modification_History** **2)/Product_XML_Schema/Identification_Area/Modification_History** **3)/Product_Document/Identification_Area/Modification_History**	
		1) *Modification_Detail*	
geom:**Motion_Counter**	The Motion_Counter class provides a set of integers that describe a (potentially) unique location (position / orientation) for a rover or other movable object. Each time an event occurs that results in a movement, a new motion counter value is created. This includes intentional motion due to drive commands, as well as potential motion due to other articulating devices, such as arms or antennae. This motion counter (or part of it) is used as a reference to define instances of coordinate systems that can move such as SITE or ROVER frames. The motion counter is defined in a mission-specific manner. Although the original intent was to have incrementing indices (e.g., MER), the motion counter could also contain any integer values that conform to the above definition, such as time or spacecraft clock values.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Motion_Counter**	
		1) *name* 2) *local_identifier* 3) *geom:Motion_Counter_Index*	
geom:**Motion_Counter_Index**	The Motion_Counter_Index class identifies and populates one element of a Motion_Counter list. The class should be repeated for each element of the list. **InSight Specific:** *InSight supports only two motion counter indices: SITE and DRIVE. Although the lander is not supposed to move, these are included for legacy software reasons.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Motion_Counter/Motion_Counter_Index[*]**	
		1) *geom:index_value_number* 2) *geom:index_id* 3) *geom:List_Index_No_Units*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
name	The name attribute provides a word or combination of words by which the object is known.	**1)/Product_Collection/Context_Area/Investigation_Area/name** **2)/Product_Collection/Context_Area/Observing_System/Observing_System_Component[*]/name** **3)/Product_Collection/Context_Area/Target_Identification/name** **4)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]/name** **5)/Product_Observational/Observation_Area/Observing_System/name** **6)/Product_Observational/File_Area_Observational/Table_Delimited[*]/name** **7)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited/Field_Delimited[*]/name** **8)/Product_XML_Schema/File_Area_XML_Schema[*]/XML_Schema/name** **9)/Product_Document/Context_Area/Investigation_Area/name** **10)/Product_Document/Context_Area/Observing_System/name** **11)/Product_Document/Context_Area/Observing_System/Observing_System_Component/name** **12)/Product_Observational/Observation_Area/Investigation_Area/name** **13)/Product_Observational/Observation_Area/Observing_System/Observing_System_Component[*]/name** **14)/Product_Observational/Observation_Area/Target_Identification/name**	
			UTF8_Short_String_Collapsed
Observation_Area	The observation area consists of attributes that provide information about the circumstances under which the data were collected.	**1)/Product_Observational/Observation_Area**	
		1) *comment* 2) *Context_Area* 3) *Time_Coordinates* 4) *Primary_Result_Summary* 5) *Investigation_Area* 6) *Observing_System* 7) *Target_Identification* 8) *Mission_Area* 9) *Discipline_Area*	
Observing_System	The Observing System class describes the entire suite used to collect the data.	**1)/Product_Collection/Context_Area/Observing_System** **2)/Product_Document/Context_Area/Observing_System** **3)/Product_Observational/Observation_Area/Observing_System**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
		1) *name* 2) *description* 3) *Observing_System_Component* 4) *Conceptual_Object*	
Observing_System_Component	The Observing System Component class describes one or more subsystems used to collect data.	**1)/Product_Collection/Context_Area/Observing_System/Observing_System_Component[*]** **2)/Product_Document/Context_Area/Observing_System/Observing_System_Component** **3)/Product_Observational/Observation_Area/Observing_System/Observing_System_Component[*]**	
		1) *name* 2) *type* 3) *description* 4) *Internal_Reference* 5) *External_Reference*	
img:**onboard_B_b**	Specifies the factor that has been multiplied by the B pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied R and G pixel values to produce the output Blue value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_B_b**	
			ASCII_Real
img:**onboard_B_g**	Specifies the factor that has been multiplied by the G pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied R and B pixel values to produce the output Blue value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_B_g**	
			ASCII_Real
img:**onboard_B_r**	Specifies the factor that has been multiplied by the R pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied G and B pixel values to produce the output Blue value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_B_r**	
			ASCII_Real
img:**Onboard_Compression**	The Onboard_Compression class contains attributes describing the compression performed onboard a spacecraft or instrument for data storage and transmission.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression**	
		1) *img:onboard_compression_class* 2) *img:onboard_compression_mode* 3) *img:onboard_compression_type* 4) *img:onboard_compression_rate* 5) *img:onboard_compression_ratio* 6) *img:onboard_compression_quality* 7) *img:deferred_flag* 8) *img:error_pixel_count* 9) *img:ICER_Parameters* 10) *JPEG_Parameters*	
img:**onboard_compression_class**	The onboard_compression_class attribute identifies the type of on-board compression used for data storage and transmission. Note that the onboard_compression_type identifies the specific compression algorithm used (for example, ICER), whereas the onboard_compression_class gives a simple indicator of the type of compression mode. Valid values: 'Lossless', 'Lossy', 'Uncompressed'	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Onboard_Compression/onboard_compression_class**	
		1) Lossless 2) Lossy 3) Uncompressed	ASCII_Short_String_Collapsed
img:**onboard_G_b**		**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_G_b**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	Specifies the factor that has been multiplied by the B pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied R and G pixel values to produce the output Green value.		ASCII_Real
img:**onboard_G_g**	Specifies the factor that has been multiplied by the G pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied R and B pixel values to produce the output Green value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_G_g**	
			ASCII_Real
img:**onboard_G_r**	Specifies the factor that has been multiplied by the R pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied G and B pixel values to produce the output Green value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_G_r**	
			ASCII_Real
img:**onboard_R_b**	Specifies the factor that has been multiplied by the B pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied R and G pixel values to produce the output Red value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_R_b**	
			ASCII_Real
img:**onboard_R_g**	Specifies the factor that has been multiplied by the G pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied R and B pixel values to produce the output Red value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_R_g**	
			ASCII_Real
img:**onboard_R_r**	Specifies the factor that has been multiplied by the R pixel value after de-Bayering (demosaicking) takes place. This value is summed with the multiplied G and B pixel values to produce the output Red value.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Processing/Onboard_Color_Matrix/onboard_R_r**	
			ASCII_Real
cart:**Orthorectified**	This is an in-situ projection that provides a true overhead view of the scene. Range data is required to create this projection, meaning there is no parallax distortion. It has a constant scale in meters/pixel.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified**	
		1) *cart:pixel_resolution_x* 2) *cart:pixel_resolution_y* 3) *cart:x_axis_maximum* 4) *cart:x_axis_minimum* 5) *cart:y_axis_maximum* 6) *cart:y_axis_minimum* 7) *cart:Pixel_Position_Origin* 8) *cart:Vector_Projection_Origin* 9) *cart:Vector_Projection_X_Axis* 10) *cart:Vector_Projection_Y_Axis* 11) *cart:Vector_Projection_Z_Axis*	
proc:**Parameter**	The Parameter class describes any information about software program execution. Examples of information that	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program/Software_Program_Parameters/Parameter[*]**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	can be captured here are software input arguments, software output arguments, log information, and references to specific data products. This class is intended to be freeform to allow data providers the ability to specify information they determine applicable and useful for their data processing software and data products. **InSight Specific:** *This is used primarily to indicate the actual parameters that were passed to the VICAR programs that created the image. Although it's likely any directory names specified do not exist in PDS, the filenames are more likely to be available. Primarily, the history label is preserved to document the processing parameters used.*	1) *name* 2) *proc:parameter_type* 3) *value* 4) *External_Reference*	
parsing_standard_id	The parsing_standard_id attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.	**1)/Product_Collection/File_Area_Inventory/Inventory/parsing_standard_id** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/parsing_standard_id** **3)/Product_Observational/File_Area_Observational_Supplemental[1]/Stream_Text/parsing_standard_id** **4)/Product_XML_Schema/File_Area_XML_Schema[*]/XML_Schema/parsing_standard_id** **5)/Product_File_Text/File_Area_Text/Stream_Text/parsing_standard_id** **6)/Product_Observational/File_Area_Observational/Header/parsing_standard_id**	
		1) 7-Bit ASCII Text 2) CDF 3.4 ISTP/IACG 3) FITS 3.0 4) ISIS2 5) ISIS2 History Label 6) ISIS3 7) PDS DSV 1 8) PDS ODL 2 9) PDS3 10) Pre-PDS3 11) UTF-8 Text 12) VICAR1 13) VICAR2	ASCII_Short_String_Collapsed
cart:**Perspective**	This is an in-situ projection that models a pinhole camera.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective**	
		1) *cart:pixel_scale_x* 2) *cart:pixel_scale_y* 3) *cart:maximum_elevation* 4) *cart:minimum_elevation* 5) *cart:start_azimuth* 6) *cart:stop_azimuth* 7) *cart:projection_azimuth* 8) *cart:projection_elevation* 9) *cart:Camera_Model_Offset*	
img:**Pixel_Averaging_Dimensions**		**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Downsampling/Pixel_Averaging_Dimensions**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Pixel_Averaging class provides the height and width, in pixels, of the area over which pixels were averaged prior to image compression.	1) *img:height_pixels* 2) *img:width_pixels*	
cart:**Pixel_Position_Origin**	The Pixel_Position_Origin class specifies the sample coordinate of the location in the image of the "special" point of the mosaic. For Vertical, Orthographic and Orthorectified projections, this is the origin of the projected coordinate system, corresponding to the Vector_Projection_Origin. In PDS3, this information was specified using the LINE_PROJECTION_OFFSET and SAMPLE_PROJECTION_OFFSET keywords.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/Pixel_Position_Origin** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/Pixel_Position_Origin**	
		1) *cart:line* 2) *cart:sample*	
cart:**pixel_scale_x**	The pixel_scale_x and pixel_scale_y attributes indicate the image array pixel scale (pixel/degree or pixel/distance) relative to the Cartesian (x,y) coordinate system as defined by the map projection. Due to varying properties across different map projections, actual surface distances for an individual pixel may be accurate only at specific location(s) within the image array (e.g. reference latitude or longitude, standard parallels, etc). For most PDS products, x and y scale values are equal ('square' pixels). The inclusion of both x and y attributes allows for anticipated products where scale may differ for each axis ('rectangular' pixels). NOTE1: For presentation of hard-copy maps, a map scale is traditionally expressed as a 'representative fraction' (the ratio of a hard-copy map to the actual subject surface (e.g. 1:250,000, where one unit of measure on the map equals 250,000 of the same unit on the body surface)). This usage is relevant when map/data are presented on hard-copy media (paper, computer screen,etc). When defining pixel scale within a stored image/array context here, we are expressing a ratio between the image array and the actual surface (thus, pixel/degree or pixel/distance units). NOTE2: Definition of this PDS4 attribute differs from how 'scale' was defined within PDS3	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/pixel_scale_x** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective/pixel_scale_x** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical_Perspective/pixel_scale_x**	
			ASCII_Real *Units_of_Map_Scale*
cart:**pixel_scale_y**	The pixel_scale_x and pixel_scale_y attributes indicate the image array pixel scale (pixel/degree or pixel/distance) relative to the Cartesian (x,y) coordinate system as defined by the map projection. Due to varying properties across different map projections, actual surface distances for an individual pixel may be accurate only at specific location(s) within the image array (e.g. reference latitude or longitude, standard parallels, etc). For most PDS products, x and y scale values are equal ('square' pixels). The	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical/pixel_scale_y** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective/pixel_scale_y** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Cylindrical_Perspective/pixel_scale_y**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	inclusion of both x and y attributes allows for anticipated products where scale may differ for each axis ('rectangular' pixels). NOTE1: For presentation of hard-copy maps, a map scale is traditionally expressed as a 'representative fraction' (the ratio of a hard-copy map to the actual subject surface (e.g. 1:250,000, where one unit of measure on the map equals 250,000 of the same unit on the body surface)). This usage is relevant when map/data are presented on hard-copy media (paper, computer screen,etc). When defining pixel scale within a stored image/array context here, we are expressing a ratio between the image array and the actual surface (thus, pixel/degree or pixel/distance units). NOTE2: Definition of this PDS4 attribute differs from how 'scale' was defined within PDS3		ASCII_Real *Units_of_Map_Scale*
Primary_Result_Summary	The Primary_Result_Summary class provides a high-level description of the types of products included in the collection or bundle	**1)/Product_Collection/Context_Area/Primary_Result_Summary** **2)/Product_Observational/Observation_Area/Primary_Result_Summary**	
		1) *type* 2) *purpose* 3) *data_regime* 4) *processing_level* 5) *processing_level_id* 6) *description* 7) *Science_Facets*	
proc:**Process**	The Process class describes one of the software processes used to produce the data product referenced in the parent Processing_Information class. This class includes descriptions of the process owner as well as the data processing software used to create the data product.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process**	
		1) *name* 2) *description* 3) *proc:process_owner_name* 4) *proc:process_owner_institution_name* 5) *proc:Software*	
img:**processing_algorithm**	The processing_algorithm attribute specifies the name of the algorithm used to perform the processing specified by the enclosing class. Algorithm names should be defined in the project documentation, and/or in the enclosing class definition. **InSight Specific:** *Insight uses 'Maki 2003'.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Radiometric_Correction/processing_algorithm** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Color_Filter_Array/processing_algorithm** **3)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Sampling/Companding/processing_algorithm** **4)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Exposure/Autoexposure/processing_algorithm**	
			ASCII_Short_String_Collapsed
proc:**Processing_Information**	The Processing_Information class contains detailed information regarding the history of processing of the data product(s) described in the label. Information that can be specified using this class includes input products used to create a specific data product and the software and processes used to produce that product.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information**	
		1) *Local_Internal_Reference* 2) *proc:Input_Product_List* 3) *Process*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
processing_level	The processing_level attribute provides a broad classification of data processing level. **InSight Specific:** *A processing level of 'Raw' indicates an EDR; the others indicate an RDR.*	**1)/Product_Collection/Context_Area/Primary_Result_Summary/processing_level** **2)/Product_Observational/Observation_Area/Primary_Result_Summary/processing_level**	
		1) Calibrated 2) Derived 3) Partially Processed 4) Raw 5) Telemetry	ASCII_Short_String_Collapsed
Product_Browse	The Product Browse class defines a product consisting of one encoded byte stream digital object. **InSight Specific:** *On InSight, browse images are made for all products whose derived_image_type_name is 'IMAGE' (except for product type CNF, which are floating-point images not suitable for browse image creation).*		
		1) *Product* 2) *Context_Area* 3) *Identification_Area* 4) *Reference_List* 5) *File_Area_Browse*	
product_class	The product_class attribute provides the name of the product class.	**1)/Product_Collection/Identification_Area/product_class** **2)/Product_XML_Schema/Identification_Area/product_class** **3)/Product_File_Text/Identification_Area/product_class** **4)/Product_Document/Identification_Area/product_class** **5)/Product_Observational/Identification_Area/product_class** **6)/Product_Browse/Identification_Area/product_class**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
		1) Product_AIP 2) Product_Ancillary 3) Product_Attribute_Definition 4) Product_Browse 5) Product_Bundle 6) Product_Class_Definition 7) Product_Collection 8) Product_Context 9) Product_DIP 10) Product_DIP_Deep_Archive 11) Product_Data_Set_PDS3 12) Product_Document 13) Product_File_Repository 14) Product_File_Text 15) Product_Instrument_Host_PDS3 16) Product_Instrument_PDS3 17) Product_Metadata_Supplemental 18) Product_Mission_PDS3 19) Product_Native 20) Product_Observational 21) Product_Proxy_PDS3 22) Product_SIP 23) Product_SIP_Deep_Archive 24) Product_SPICE_Kernel 25) Product_Service 26) Product_Software 27) Product_Subscription_PDS3 28) Product_Target_PDS3 29) Product_Thumbnail 30) Product_Update 31) Product_Volume_PDS3 32) Product_Volume_Set_PDS3 33) Product_XML_Schema 34) Product_Zipped	ASCII_Short_String_Collapsed
Product_Collection	A Product_Collection has a table of references to one or more basic products. The references are stored in a table called the inventory.		
		1) *Product* 2) *Identification_Area* 3) *Context_Area* 4) *Reference_List* 5) *Collection* 6) *File_Area_Inventory*	
Product_Document	A Product Document is a product consisting of a single logical document that may comprise one or more document editions.		
		1) *Product* 2) *Identification_Area* 3) *Context_Area* 4) *Reference_List* 5) *Document*	
Product_File_Text	The Product File Text consists of a single text file with ASCII character encoding.		
		1) *Product* 2) *Identification_Area* 3) *Reference_List* 4) *File_Area_Text*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
Product_Observational	A Product_Observational is a set of one or more information objects produced by an observing system.		
		1) *Product* 2) *Identification_Area* 3) *Observation_Area* 4) *Reference_List* 5) *File_Area_Observational* 6) *File_Area_Observational_Supplemental*	
msn:**product_type_name**	The product_type_name identifies a group of data products within a collection that have some property in common, such as processing level, resolution, or instrument-specific setting. **InSight Specific:** *This corresponds to the EDR/RDR Product Types defined in Table 4-4 in the SIS and used as identifiers throughout.*		
			ASCII_Short_String_Collapsed
Product_XML_Schema	The Product_XML_Schema describes a resource used for the PDS4 implementation into XML.		
		1) *Product* 2) *Context_Area* 3) *Identification_Area* 4) *Reference_List* 5) *File_Area_XML_Schema*	
proc:**program_type_name**	The program_type_name attribute specifies the type of software program used for this software processing. Some examples include: VICAR, ISIS, GDAL.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program[*]/program_type_name** **2)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program/program_type_name**	
			ASCII_Short_String_Collapsed
publication_date	The publication_date attribute provides the date on which an item was published.	**1)/Product_Document/Document/publication_date**	
			ASCII_Date_YMD
publication_year	The publication_year attribute provides the year in which the product should be considered as published. Generally, this will be the year the data were declared "Certified" or "Archived".	**1)/Product_Collection/Identification_Area/Citation_Information/publication_year** **2)/Product_File_Text/Identification_Area/Citation_Information/publication_year** **3)/Product_Document/Identification_Area/Citation_Information/publication_year**	
			ASCII_Date_YMD
purpose	The purpose attribute provides an indication of the primary purpose of the observations included. **InSight Specific:**	**1)/Product_Collection/Context_Area/Primary_Result_Summary/purpose** **2)/Product_Observational/Observation_Area/Primary_Result_Summary/purpose**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	Products coming from the InSight pipeline are always marked as Science.	1) Calibration 2) Checkout 3) Engineering 4) Navigation 5) Observation Geometry 6) Science	ASCII_Short_String_Collapsed
geom:**Quaternion_Model_Transform**	The Quaternion_Model_Transform class specifies, along with Vector_Model_Transform class, the transform used for the camera model in an image. Camera models created by the calibration process have associated with them a pose, comprised of the position (offset) and orientation (quaternion) of the camera at the time it was calibrated. The model is transformed ("pointed") for a specific image by computing, generally using articulation device kinematics, a final pose for the image. The camera model is then translated and rotated from the calibration to final pose. This class specifies the quaternion portion of the final pose. **InSight Specific:** *The calibration pose is in NSYT_idc.point in the calibration collection.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Quaternion_Model_Transform**	
		1) *geom:qcos* 2) *geom:qsin1* 3) *geom:qsin2* 4) *geom:qsin3*	
img:**Radiometric_Correction**	The Radiometric_Correction class is a container for the type and details of the radiometric calibration performed on the product.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Radiometric_Correction**	
		1) *img:active_flag* 2) *img:radiometric_type* 3) *img:processing_venue* 4) *img:radiometric_zenith_scaling_factor* 5) *img:processing_algorithm* 6) *img:responsivity_r* 7) *img:sequence_number* 8) *img:responsivity_g* 9) *img:responsivity_b* 10) *img:responsivity_pan* 11) *comment* 12) *img:Data_Processing*	
img:**radiometric_zenith_scaling_factor**	Defines the scaling factor used for Scaled Radiance or Scaled Spectral Radiance. Scaled radiance is created by dividing radiance by this factor, which scales the radiance to what it would be if the sun were at the zenith with a clear atmosphere.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Radiometric_Correction/radiometric_zenith_scaling_factor**	
			ASCII_Real
Record_Delimited	The Record_Delimited class is a component of the delimited table (spreadsheet) class and defines a record of the delimited table.	**1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/Record_Delimited**	
		1) *fields* 2) *maximum_record_length* 3) *groups* 4) *Field_Delimited*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
record_delimiter	The record_delimiter attribute provides the character or characters used to indicate the end of a record.	**1)/Product_Collection/File_Area_Inventory/Inventory/record_delimiter** **2)/Product_Observational/File_Area_Observational/Table_Delimited[*]/record_delimiter** **3)/Product_Observational/File_Area_Observational_Supplemental[1]/Stream_Text/record_delimiter** **4)/Product_File_Text/File_Area_Text/Stream_Text/record_delimiter**	
		1) Carriage-Return Line-Feed 2) carriage-return line-feed	ASCII_Short_String_Collapsed
records	The records attribute provides a count of records.	**1)/Product_Collection/File_Area_Inventory/File/records** **2)/Product_Collection/File_Area_Inventory/Inventory/records** **3)/Product_Observational/File_Area_Observational/Table_Delimited[*]/records** **4)/Product_XML_Schema/File_Area_XML_Schema[*]/File/records**	
			ASCII_NonNegative_Integer
disp:**red_channel_band**	The red_channel_band attribute identifies the number of the band, along the band axis, that should be loaded, by default, into the red channel of a display device. The first band along the band axis has band number 1.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Color_Display_Settings/red_channel_band**	
			ASCII_Integer
Reference_List	The Reference_List class provides general references, cross-references, and source products for the product. References cited elsewhere in the label need not be repeated here. **InSight Specific:** *This is used to point to the browse image (if it exists), as well as the source products (EDRs or Raw products) that were used to make this derived product. Note that EDRs refer to themselves as a source product.*	**1)/Product_Collection/Reference_List** **2)/Product_File_Text/Reference_List** **3)/Product_Document/Reference_List** **4)/Product_Observational/Reference_List** **5)/Product_Browse/Reference_List**	
		1) *Internal_Reference* 2) *External_Reference* 3) *Source_Product_Internal* 4) *Source_Product_External*	

reference_type	The reference_type attribute provides the name of the association.	**1)/Product_Collection/Context_Area/Investigation_Area/Internal_Reference/reference_type** **2)/Product_Collection/Context_Area/Observing_System/Observing_System_Component[*]/Internal_Reference/reference_type** **3)/Product_Collection/Context_Area/Target_Identification/Internal_Reference/reference_type** **4)/Product_Collection/Reference_List/Internal_Reference[*]/reference_type** **5)/Product_Collection/File_Area_Inventory/Inventory/reference_type** **6)/Product_File_Text/Reference_List/Source_Product_Internal[*]/reference_type** **7)/Product_Document/Reference_List/Internal_Reference[*]/reference_type** **8)/Product_Document/Context_Area/Investigation_Area/Internal_Reference/reference_type** **9)/Product_Document/Context_Area/Observing_System/Observing_System_Component/Internal_Reference/reference_type** **10)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Geometry_Projection/Internal_Reference/reference_type** **11)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Stereo_Product_Parameters/Internal_Reference/reference_type** **12)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product[*]/Internal_Reference/reference_type** **13)/Product_Observational/Observation_Area/Discipline_Area/Surface_Imaging/Derived_Product_Parameters/Placement_Target_Instrument/Internal_Reference/reference_type** **14)/Product_Observational/Reference_List/Source_Product_Internal[*]/reference_type** **15)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Flat_Field_Correction/Flat_Field_File/Internal_Reference/reference_type** **16)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Input_Product_List/Input_Product/Internal_Reference/reference_type** **17)/Product_Observational/Observation_Area/Investigation_Area/Internal_Reference/reference_type** **18)/Product_Observational/Observation_Area/Observing_System/Observing_System_Component[*]/Internal_Reference/reference_type** **19)/Product_Observational/Observation_Area/Target_Identification/Internal_Reference/reference_type** **20)/Product_Observational/Reference_List/Internal_Reference/reference_type** **21)/Product_Observational/Reference_List/Source_Product_Internal/reference_type** **22)/Product_Browse/Reference_List/Internal_Reference/reference_type**

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
			ASCII_Short_String_Collapsed
geom:**rotation_direction**	The rotation_direction attribute identifies the direction of the rotation for a specific quaternion. This is used when the two frames involved are unambiguously identifed in the enclosing classes. **InSight Specific:** *In the context of a coordinate frame definition, 'Forward' means that given a vector expressed in the current ('present') frame, multiplication by the quaternion will give the same vector as expressed in the reference frame.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Coordinate_Space_Definition[*]/Quaternion_Plus_Direction/rotation_direction**	
		1) Present to Reference 2) Reference to Present 3) Forward 4) Reverse 5) From Base 6) Toward Base	ASCII_Short_String_Collapsed
cart:**sample**	The sample attribute specifies the sample number.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical/Pixel_Position_Origin/sample** **2)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Orthorectified/Pixel_Position_Origin/sample** **3)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Perspective/Camera_Model_Offset/sample**	
			ASCII_Real
img:**Sampling**	The Sampling class contains attributes and classes related to the sampling, scaling, companding, and compression or reduction in resolution of data.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Sampling**	
		1) *img:crosstrack_summing* 2) *img:downtrack_summing* 3) *img:sample_bits* 4) *img:sample_bit_mask* 5) *img:sampling_factor* 6) *img:Companding*	
Science_Facets	The Science_Facets class contains the science-related search facets. It is optional and may be repeated if an product has facets related to, for example, two different disciplines (as defined by the discipline_name facet). Note that Science_Facets was modeled with Discipline_Facets as a component and Discipline_Facets was modeled with Group_Facet1 and Group_Facet2 as components. This dependency hierarchy was flattened and only Science_Facets exists in the schema.	**1)/Product_Collection/Context_Area/Primary_Result_Summary/Science_Facets** **2)/Product_Observational/Observation_Area/Primary_Result_Summary/Science_Facets**	
		1) *wavelength_range* 2) *domain* 3) *Discipline_Facets* 4) *discipline_name*	
msn_surface:**sequence_id**	The sequence_id identifies the command sequence used to acquire this product.		
			ASCII_Short_String_Collapsed
sequence_number	The sequence_number attribute provides a number that is used to order axes in an array.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Axis_Array[*]/sequence_number** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Axis_Array[*]/sequence_number**	
			ASCII_NonNegative_Integer

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	 Data Type *Units*
img:**Shutter_Subtraction**	The Shutter_Subtraction class specifies attributes describing the removal from the image of the shutter, or fixed-pattern.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Shutter_Subtraction** **2)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Commanded_Parameters/Shutter_Subtraction**	
		1) *img:active_flag* 2) *img:shutter_subtraction_mode* 3) *img:processing_venue* 4) *img:exposure_duration_threshold_count* 5) *img:processing_algorithm* 6) *img:sequence_number* 7) *img:Data_Processing*	
proc:**Software**	The Software class describes the data processing software used in order to produce the data product.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software**	
		1) *name* 2) *software_id* 3) *software_version_id* 4) *software_type* 5) *description* 6) *Internal_Reference* 7) *proc:Software_Program*	
proc:**Software_Program**	The Software_Program class describes the specific components or tasks of the Software executed in producing the data product. **InSight Specific:** *When used to document the VICAR processing history, multiple instances of Software_Program show the different programs that have been run on the data, in the order they were run.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program[*]** **2)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program**	
		1) *name* 2) *proc:program_type_name* 3) *proc:program_user* 4) *proc:program_hostname* 5) *proc:program_path* 6) *proc:program_version* 7) *proc:program_start_date_time* 8) *proc:program_stop_date_time* 9) *description* 10) *proc:Software_Program_Parameters*	
proc:**Software_Program_Parameters**	The Software_Program_Parameters class specifies the set of 1 or more parameters for the software program. These parameters can be input, output, or log information. The premise being a way to capture as much information as possible about the software program execution.	**1)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program[*]/Software_Program_Parameters** **2)/Product_Observational/Observation_Area/Discipline_Area/Processing_Information/Process/Software/Software_Program/Software_Program_Parameters**	
		1) *proc:Parameter*	
Source_Product_Internal	The Source_Product _Internal class is used to reference one or more source products in the PDS4 registry system. A source product contains input data for the creation of this product.	**1)/Product_File_Text/Reference_List/Source_Product_Internal[*]** **2)/Product_Observational/Reference_List/Source_Product_Internal[*]** **3)/Product_Observational/Reference_List/Source_Product_Internal**	
		1) *lidvid_reference* 2) *reference_type* 3) *comment*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
cart:**Spatial_Reference_Information**	The Spatial_Reference_Information class provides a description of the reference frame for, and the means to encode, coordinates in a data set.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information**	
		1) *cart:Horizontal_Coordinate_System_Definition*	
Special_Constants	The Special Constants class provides a set of values used to indicate special cases that occur in the data.	**1)/Product_Observational/File_Area_Observational/Array_2D_Image/Special_Constants** **2)/Product_Observational/File_Area_Observational/Array_3D_Image/Special_Constants**	
		1) *saturated_constant* 2) *missing_constant* 3) *error_constant* 4) *invalid_constant* 5) *unknown_constant* 6) *not_applicable_constant* 7) *valid_maximum* 8) *high_instrument_saturation* 9) *high_representation_saturation* 10) *valid_minimum* 11) *low_instrument_saturation* 12) *low_representation_saturation*	
geom:**SPICE_Kernel_Files**	The SPICE_Kernel_Files class provides references to the SPICE files used when calculating geometric values.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/SPICE_Kernel_Files**	
		1) *comment* 2) *geom:SPICE_Kernel_Identification*	
geom:**SPICE_Kernel_Identification**	The SPICE_Kernel_Identification class optionally includes the SPICE kernel type and provides two alternatives for identifying the product: LIDVID using Internal_Reference, and the file name of the kernel file. Although optional, LIDVID should be given if one is available. The optional kernel_provenance attribute indicates whether the kernel is a predict or reconstructed kernel, or some combination of the two, or if it is a kernel type for which such distinctions do not apply.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/SPICE_Kernel_Files/SPICE_Kernel_Identification**	
		1) *kernel_type* 2) *geom:spice_kernel_file_name* 3) *geom:kernel_provenance* 4) *Internal_Reference*	
msn:**start_local_mean_solar_time_sol**	The start_local_mean_solar_time_sol element specifies the number of solar days elapsed since a reference day (e.g. the day on which a landing vehicle set down) for local mean solar time (LMST). Days are measured in rotations of the planet in question from midnight to midnight. The reference day is '0', as Landing day is Sol 0. If before Landing day, then value will be less than or equal to '0'and can be negative. **InSight Specific:** *Note that this sol value can be different from the sol (start_sol_number), which is derived from local_true_solar_time.*		
			ASCII_Integer
img_surface:**stereo_baseline_length**	The stereo_baseline_length attribute specifies the separation between the two cameras used for processing of the stereo image.		
			ASCII_Real *Units_of_Length*
img_surface:**Stereo_Product_Parameters**			

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Stereo_Product_Parameters class describes the conditions under which stereo analysis was performed. This includes items such as the stereo baseline (separation between the cameras) and what partner image(s) were used for stereo analysis. If present, stereo partner images can be referenced using either an Internal_Reference or External_Reference.	1) *img_surface:stereo_baseline_length* 2) *External_Reference*	
Stream_Text	The Stream text class defines a text object.	**1)/Product_Observational/File_Area_Observational_Supplemental[1]/Stream_Text** **2)/Product_File_Text/File_Area_Text/Stream_Text**	
		1) *name* 2) *offset* 3) *record_delimiter* 4) *local_identifier* 5) *object_length* 6) *md5_checksum* 7) *description* 8) *parsing_standard_id* 9) *Parsable_Byte_Stream* 10) *Digital_Object*	
img:**Subframe**	The Subframe class describes the position and other optional characteristics of an image subframe, relative to the original image.	**1)/Product_Observational/Observation_Area/Discipline_Area/Imaging/Subframe**	
		1) *img:first_line* 2) *img:first_sample* 3) *img:lines* 4) *img:samples* 5) *img:line_fov* 6) *img:sample_fov* 7) *name* 8) *description* 9) *img:subframe_type*	
img_surface:**Surface_Imaging**	Attributes specific to imaging instruments on surface missions.		
		1) *img_surface:Image_Identifiers* 2) *img_surface:Instrument_Information* 3) *img_surface:Derived_Product_Parameters* 4) *img_surface:Error_Model* 5) *img_surface:Geometry_Projection* 6) *img_surface:Stereo_Product_Parameters* 7) *geom:Coordinate_Space_Reference* 8) *img_surface:Error_Pixel*	
msn:**Surface_Mission**			

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
	The Surface_Mission class provides information about a surface mission.	1) *msn:start_sol_number* 2) *msn:stop_sol_number* 3) *msn:start_local_mean_solar_time* 4) *msn:stop_local_mean_solar_time* 5) *msn:start_local_mean_solar_time_sol* 6) *msn:stop_local_mean_solar_time_sol* 7) *msn:start_local_true_solar_time* 8) *msn:stop_local_true_solar_time* 9) *msn:start_local_true_solar_time_sol* 10) *msn:stop_local_true_solar_time_sol* 11) *msn:solar_longitude*	
msn_surface:**Surface_Mission_Information**	The Surface_Mission_Information class contains attributes specific to surface missions which apply across instrument types.		
		1) *msn_surface:surface_gravity* 2) *msn_surface:Command_Execution* 3) *msn_surface:Telemetry*	
cart:**Surface_Model_Parameters**	null	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters**	
		1) *cart:surface_model_type* 2) *cart:Surface_Model_Planar* 3) *geom:Coordinate_Space_Reference*	
cart:**Surface_Model_Planar**	null	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Surface_Model_Parameters/Surface_Model_Planar**	
		1) *cart:Vector_Surface_Normal* 2) *cart:Vector_Surface_Ground_Location*	
Table_Delimited	The Table_Delimited class defines a simple table (spreadsheet) with delimited fields and records.	**1)/Product_Observational/File_Area_Observational/Table_Delimited[*]**	
		1) *name* 2) *offset* 3) *records* 4) *local_identifier* 5) *object_length* 6) *record_delimiter* 7) *md5_checksum* 8) *parsing_standard_id* 9) *description* 10) *field_delimiter* 11) *Parsable_Byte_Stream* 12) *Digital_Object* 13) *Uniformly_Sampled* 14) *Record_Delimited*	
Target_Identification	The Target_Identification class provides detailed target identification information.	**1)/Product_Collection/Context_Area/Target_Identification** **2)/Product_Observational/Observation_Area/Target_Identification**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
		1) *name* 2) *alternate_designation* 3) *type* 4) *description* 5) *Internal_Reference*	
msn_surface:**Telemetry**	The Telemetry class contains downlink-related attributes used primarily during mission operations.		
		1) *msn_surface:application_id* 2) *msn_surface:application_subtype_id* 3) *msn_surface:application_name* 4) *msn_surface:provider_id* 5) *msn_surface:flight_software_version_id* 6) *msn_surface:telemetry_source_name* 7) *msn_surface:transport_protocol* 8) *msn_surface:communication_session_id* 9) *msn_surface:telemetry_source_start_time* 10) *msn_surface:telemetry_source_sclk_start* 11) *msn_surface:product_completion_status* 12) *msn_surface:earth_received_start_date_time* 13) *msn_surface:earth_received_stop_date_time* 14) *msn_surface:download_priority* 15) *msn_surface:data_size* 16) *msn_surface:expected_packets* 17) *msn_surface:received_packets*	
Time_Coordinates	The Time_Coordinates class provides a list of time coordinates.	**1)/Product_Collection/Context_Area/Time_Coordinates** **2)/Product_Observational/Observation_Area/Time_Coordinates**	
		1) *start_date_time* 2) *stop_date_time* 3) *local_mean_solar_time* 4) *local_true_solar_time* 5) *solar_longitude*	
title	The name given to the resource. Typically, a Title will be a name by which the resource is formally known. - Dublin Core - The title is used to refer to an object in a version independent manner.	**1)/Product_Collection/Identification_Area/title** **2)/Product_XML_Schema/Identification_Area/title** **3)/Product_File_Text/Identification_Area/title** **4)/Product_Document/Identification_Area/title** **5)/Product_Observational/Identification_Area/title** **6)/Product_Browse/Identification_Area/title**	
			UTF8_Short_String_Collapsed

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
type	The type attribute classifies Investigation_Area according to the scope of the investigation..	**1)/Product_Collection/Context_Area/Investigation_Area/type** **2)/Product_Collection/Context_Area/Observing_System/Observing_System_Component[*]/type** **3)/Product_Collection/Context_Area/Target_Identification/type** **4)/Product_Document/Context_Area/Investigation_Area/type** **5)/Product_Document/Context_Area/Observing_System/Observing_System_Component/type** **6)/Product_Observational/Observation_Area/Investigation_Area/type** **7)/Product_Observational/Observation_Area/Observing_System/Observing_System_Component[*]/type** **8)/Product_Observational/Observation_Area/Target_Identification/type**	
		1) Individual Investigation 2) Mission 3) Observing Campaign 4) Other Investigation	ASCII_Short_String_Collapsed
geom:**Vector_Device_Gravity**	The Vector_Device_Gravity class is a unit vector that specifies the direction of an external force acting on the articulation device, in the spacecraft's coordinate system, at the time the pose was computed.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[1]/Vector_Device_Gravity**	
		1) *geom:x_unit* 2) *geom:y_unit* 3) *geom:z_unit* 4) *geom:Vector_Cartesian_Unit*	
geom:**Vector_Model_Transform**	The Vector_Model_Transform class specifies, along with the Quaternion_Model_Transform class, the transform used for the camera model in this image. Camera models created by the calibration process have associated with them a pose, comprised of the position (offset) and orientation (quaternion) of the camera at the time it was calibrated. The model is transformed ("pointed") for a specific image by computing, generally using articulation device kinematics, a final pose for the image. The camera model is then translated and rotated from the calibration to final pose. This class specifies the offset portion of the final pose. **InSight Specific:** *The calibration pose is in NSYT_idc.point in the calibration collection.*	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/Vector_Model_Transform**	
		1) *geom:x* 2) *geom:y* 3) *geom:z* 4) *geom:Vector_Cartesian_No_Units*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
version_id	The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation. **InSight Specific:** *On InSight, the version is always x.0 where x matches the operations version at the end of the filename. Thus versions may not start at 1.0 and version numbers may be skipped.*	**1)/Product_Collection/Identification_Area/version_id** **2)/Product_Collection/Identification_Area/Modification_History/Modification_Detail/version_id** **3)/Product_XML_Schema/Identification_Area/version_id** **4)/Product_XML_Schema/Identification_Area/Modification_History/Modification_Detail/version_id** **5)/Product_Document/Identification_Area/Modification_History/Modification_Detail/version_id** **6)/Product_File_Text/Identification_Area/version_id** **7)/Product_Document/Identification_Area/version_id** **8)/Product_Observational/Identification_Area/version_id** **9)/Product_Browse/Identification_Area/version_id**	
			ASCII_Short_String_Collapsed
cart:**Vertical**	This is an in-situ projection that provides an overhead view. By projecting to a surface model, the need for range data is eliminated, but significant layover effects can happen when the actual geometry does not match the surface model. It has a constant scale in meters/pixel, subject to layover distortion.	**1)/Product_Observational/Observation_Area/Discipline_Area/Cartography/Spatial_Reference_Information/Horizontal_Coordinate_System_Definition/Local/Map_Projection_Lander/Vertical**	
		1) *cart:pixel_resolution_x* 2) *cart:pixel_resolution_y* 3) *cart:x_axis_maximum* 4) *cart:x_axis_minimum* 5) *cart:y_axis_maximum* 6) *cart:y_axis_minimum* 7) *cart:Pixel_Position_Origin* 8) *cart:Vector_Projection_Origin*	
disp:**vertical_display_axis**	The vertical_display_axis attribute identifies, by name, the axis of an Array (or Array subclass) that is intended to be displayed in the vertical or "line" dimension on a display device. The value of this attribute must match the value of one, and only one, axis_name attribute in an Axis_Array class of the associated Array.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Display_Direction/vertical_display_axis**	
			ASCII_Short_String_Collapsed
disp:**vertical_display_direction**	The vertical_display_direction attribute specifies the direction along the screen of a display device that data along the vertical axis of an Array is supposed to be displayed.	**1)/Product_Observational/Observation_Area/Discipline_Area/Display_Settings/Display_Direction/vertical_display_direction**	
		1) Bottom to Top 2) Top to Bottom	ASCII_Short_String_Collapsed
wavelength_range	The wavelength range attribute specifies the wavelength range over which the data were collected or which otherwise characterizes the observation(s). Boundaries are	**1)/Product_Collection/Context_Area/Primary_Result_Summary/Science_Facets/wavelength_range** **2)/Product_Observational/Observation_Area/Primary_Result_Summary/Science_Facets/wavelength_range**	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath** Valid Values (attribute) *Children (class)*	Data Type *Units*
	vague, and there is overlap. **InSight Specific:** *For InSight cameras the value is always Visible.*	1) Far Infrared 2) Gamma Ray 3) Infrared 4) Microwave 5) Millimeter 6) Near Infrared 7) Radio 8) Submillimeter 9) Ultraviolet 10) Visible 11) X-ray	ASCII_Short_String_Collapsed
geom:**x_pixel**	The x component of a Cartesian pixel vector; typically used in cameral models.	**1)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Horizontal/x_pixel** **2)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Vertical/x_pixel** **3)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Horizontal/x_pixel** **4)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Vertical/x_pixel** **5)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Horizontal/x_pixel** **6)/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Vertical/x_pixel**	
			ASCII_Real
XML_Schema	The XML Schema class defines a resource used for the PDS4 implementation into XML.	**1)/Product_XML_Schema/File_Area_XML_Schema[*]/XML_Schema**	
		1) *name* 2) *offset* 3) *parsing_standard_id* 4) *local_identifier* 5) *object_length* 6) *ldd_version_id* 7) *md5_checksum* 8) *description* 9) *Parsable_Byte_Stream* 10) *Digital_Object*	

Dictionary:**PDS4 Keyword** *VICAR Property.**VICAR Keyword***	**General Definition** *InSight-Specific Information*	**XPath**	
		Valid Values (attribute) *Children (class)*	Data Type *Units*
geom:**y_pixel**	The y component of a Cartesian pixel vector; typically used in cameral models.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Horizontal/y_pixel **2)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Vertical/y_pixel **3)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Horizontal/y_pixel **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Vertical/y_pixel **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Horizontal/y_pixel **6)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Vertical/y_pixel	
			ASCII_Real
geom:**z_pixel**	The z component of a Cartesian pixel vector; typically used in cameral models.	**1)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Horizontal/z_pixel **2)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVORE_Model/Vector_Vertical/z_pixel **3)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Horizontal/z_pixel **4)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHV_Model/Vector_Vertical/z_pixel **5)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Horizontal/z_pixel **6)**/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Camera_Model_Parameters/CAHVOR_Model/Vector_Vertical/z_pixel	
			ASCII_Real